
THE STATE AND THE REACTOR: NUCLEAR POLITICS IN POST-SUHARTO INDONESIA¹

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Introduction

Standing tall on Jepara's main street, the building was only halfway done when it was chosen as a venue to host an important gathering on a day in early September 2007. The owner of the building, the Jepara district branch of Nahdlatul Ulama (Pengurus Cabang Nahdlatul Ulama, PCNU), Indonesia's largest Islamic social organization, had only been able to place some decorations to embellish the unfinished three-story building. The urgency of this meeting PCNU was compelled to host had apparently prevented them from reserving a better place. A month of preparation had convinced PCNU's leaders that they would be able to act as mediators and facilitate a healthy dialogue between two conflicting groups that held opposing stances regarding Jakarta's plan to build nuclear power plants in the Muria Peninsula, about fifty kilometers from the PCNU headquarters. The presence of Minister of Research and Technology Kusmayanto Kadiman, who was invited to inaugurate the one-day meeting, pressured PCNU to ensure that everything was under control. Consequently, a battalion of security officers was deployed around the perimeter of the building, blocking off the front street to prevent uninvited guests from interrupting the proceedings. What occurred, it turned out, was not exactly what PCNU had anticipated. After a two-hour delay, Minister Kadiman, accompanied by the district

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head of Jepara and a few VIPs from Jakarta, arrived at the place uncomfortably squeezed in a mid-sized vehicle that had driven there at high speeds, attempting to escape from an angry mob of three thousand local Balong Village residents, who had confronted the minister in downtown Jepara and followed him to the site of the meeting. Balong residents wanted the minister to accept a petition guaranteeing that no nuclear power plants would be erected in the Muria Peninsula. Minister Kadiman rejected the petition on the grounds that he had no power to make such a pledge. As a result, the crowd became furious and began to shout curses at the minister.

The protest mounted by enraged Balong residents was not the only trouble Minister Kadiman and his entourage encountered on that day in Jepara. The meeting itself would be disappointing to representatives of the Ministry of Research and Technology (Kementerian Riset dan Teknologi, RISTEK) who had sought to gain public acceptance of nuclear energy development in the region; the meeting's participants would vote, instead, to restrict that development. The meeting was organized as a venue for all Central Javanese *ulamas* (clerics) of the Nahdlatul Ulama (NU), who came to participate in a traditional *bahtsul masa'il*—an in-depth examination of a contentious issue that is meant to conclude with a decision based on the teachings of the Qur'an. The *bahtsul masa'il* was viewed as a necessary exercise to assess perceived benefits that could be gained from the erection of a nuclear power plant in Muria and weigh those against possible detriments that might affect the local community. The *ulamas* who eagerly attended the meeting were not nuclear engineers and had little knowledge of nuclear physics or energy production. Most of them were heads of NU *pesantren* (boarding schools), where Muslim parents send their children to study Islam and local religious traditions. The *ulamas* are considered to be the guardians of Islamic values and are expected to dedicate their time, efforts, and knowledge to uphold the righteousness of the *nahdliyin*, NU adherents who constitute a large majority of the population in northern Central Java.

Given their respected position in the community, the *ulamas* felt obliged to provide commentary on the nuclear issue that was creating widespread anxiety among local residents, especially those who lived in the vicinity of the proposed future site of the nuclear power plants. To that end, PCNU had formed an expert panel comprising both pro- and anti-nuclear power spokespersons. Based on detailed information provided from both sides of the panel, by nighttime all PCNU *ulamas* were engaged in a heated debate concerning whether they would favor or reject Indonesia's first nuclear power reactors. This debate was organized democratically, with space provided for interruptions, arguments, and disagreements. As it drew closer to midnight, despite a minority that was inclined to agree with the benefits of nuclear power, the forum reached a conclusion to issue a *fatwa* (consensus) that would shock the public. After a long debate, the *ulamas* finally announced: "Nuclear is *haram* [forbidden]!"

The controversial decision by PCNU to forbid the construction of nuclear power plants in the Muria Peninsula, insofar as they had the authority to do so—a decision that, in the view of pro-nuclear bureaucrats in Jakarta, seemed to be hastily made, if not mistaken—was unprecedented and spawned mixed and ambivalent reactions. But the *fatwa* represented something more than the *ulamas'* concerns with protecting the safety of the local community. By framing nuclear power as an issue within Islamic jurisprudence, the PCNU *ulamas* had joined an anti-nuclear alliance constituted of

emerging groups within civil society that were mobilizing public resistance against the state authority that had long desired and sought to have and control nuclear power, a form of technology symbolically associated with the state's power, prestige, and greatness.

Nuclear technology is not new to Indonesia. A national research program focused on nuclear power has been operating since the late 1950s. To date, the Indonesian Nuclear Power Agency (Badan Tenaga Nuklir Nasional, BATAN), the central authority for nuclear research and development, has established and operated three nuclear research reactors in Serpong, Bandung, and Yogyakarta. Although Indonesia entered the nuclear age decades ago, it is only now that nuclear power looms as a purportedly inevitable option that promises to mitigate the energy crisis that has troubled Indonesia since its oil production began to decline in the late 1990s. Plans for this megaproject originated twenty years back, and, after a few setbacks, had a resurgence in the summer of 2006. The renaissance of the nuclear industry in the global market, prompted by issues such as climate change and the recent international oil crisis, has renewed the momentum of Indonesian nuclear power development. Despite public skepticism that nuclear development is suitable for Indonesia and public concern that the government lacks sufficient capacity to handle high-risk technology, nuclear technocrats in Jakarta, who are involved in research, planning, and the commercialization of nuclear power, have been persistent in pressuring the government to carry out this capital-intensive enterprise soon.

The bewildering eagerness of high officials in Jakarta to adopt the nuclear option calls for an inquiry into the politics of nuclear power. An in-depth analysis is required to unravel underlying logics, arguments, and interests shaping the behavior of the state, which has undergone structural destabilization after the collapse of the Suharto regime. Here I use the term "politics" to refer to the interplay of power and knowledge utilized by the state to impose a set of regulations on public affairs and to confront dissenting movements organized by non-state actors. In this particular context, nuclear politics is highly relevant if we seek to comprehend the nature of the post-Suharto state in relation to ongoing democratic transitions, a transitional process that many Indonesians feel has dragged the country into prolonged, multidimensional crises, which the state has been unable to handle effectively. By delving into the politics of nuclear power in post-Suharto Indonesia, this study touches upon three highly political elements, namely, the state, technology, and civil society, and analyzes how they are dynamically intertwined. At this point, it is instructive to provide the analytical backdrop against which this study draws its two central arguments.

Suharto's abrupt disappearance from Indonesian politics over one decade ago brought about extreme social and political turbulence that severely affected society, as well as the institution of the state. Although the post-Suharto state continues to dominate public decision-making, from macro financial arrangements to micro-level planning of almost all public sectors, its operations in many levels and across sectors have been disrupted by dramatic changes in institutional structure that resulted from political reforms enforced by the 1998 *reformasi* movement. A corollary of the structural reconfiguration of the state institution is diminution of the full power and authority once enjoyed by the New Order state. While the post-Suharto state is gradually undergoing readjustment to comply with democratic principles, its "governmentality,"

to echo Michel Foucault,³ which it inherited from the New Order authoritarian rule and which is inclined to maintain hegemonic legitimacy, continues to direct the way in which the state perceives its central place in society. The reality of diminishing authority and the lingering, though obsolete, governing style create an inconvenient gap the state wishes to eliminate. It is at this juncture where nuclear power, seen as more than just another source of energy, offers a tempting solution for the state that wishes to assert its authority both symbolically and materially. The development of a nuclear power industry also appeals to the state because the industry's technical requirements necessitate a centralized system to control the energy supply, which is the backbone of national industrial growth. This article will examine the dynamics of the politics of the state as it seeks to secure its authority through the use of technology, and I will contend that the rationale for going nuclear resides not in techno-economic purposes, *per se*, but, more importantly, in the desire of the state to assert its power over society. Thus, this paper uses nuclear politics as a window through which to observe the state's power structure situated within a post-authoritarian context, and, in this way, seeks to clarify state–society relations in Indonesia.

By the same token, this paper will also describe an anti-nuclear movement organized by grassroots groups seeking to challenge state-dominated nuclear discourses. The breakdown of Suharto's authoritarianism has opened up much greater space for democratic actions and protests. Despite the emergence of uncivil society groups, which threaten democratic advances,⁴ one can observe in general the flourishing of social movements in the public sphere during the post-Suharto era. These movements include those concerned with sustainability of energy resources, an issue that continues to have a significant impact on the lives of the low-middle class. As mentioned earlier, while nuclear power is gaining currency with the state, it is simultaneously stirring up disapproval from the public, resulting in a schism between the state and society. The meeting in Jepara described above, along with a series of similar events, confirms that the anti-nuclear alliance is gaining influence in the arena of democratic politics. This alliance is constituted by a network of civil society groups spanning from Jakarta all the way to Jepara. This analysis will shed light on how the anti-nuclear movement has arisen and gained strength as an organized resistance movement capable of challenging the state's nuclear ambition. This organized resistance is characterized by massive participation from multiple grassroots groups that share common concerns over possible hazards produced by the state's decision to utilize nuclear power. The anti-nuclear groups have taken a set of actions and proceeded to disseminate knowledge and information aimed at countering the state's nuclear ambitions. Furthermore, as a form of organized resistance that is rooted in civil society, the anti-nuclear movement has developed a sort of collective intelligence and self-organizing capacity by mobilizing new social capital to generate and publicize anti-nuclear discourses, an action that has successfully delayed the production of nuclear power in Indonesia.

³ Michel Foucault, "Governmentality," in *The Foucault Effect: Studies in Governmentality* ed. G. Burchell et al. (Chicago, IL: University of Chicago Press, 1991).

⁴ Verena Beittinger-Lee, *(Un)Civil Society and Political Change in Indonesia: A Contested Arena* (London: Routledge, 2009).

Technological Politics and the State

Those who have studied the dynamics of state politics are prone to take for granted the significance of technology in state policies. This is unfortunate, as the state continuously exploits technology to enlarge the scope of its authority. Wherever we look today, advanced technology is increasingly embedded in state systems of control. Railroads, highways, telecommunication networks, electricity grids, and surveillance devices make up the array of megatechnical systems whose inherent characteristics enable the state to exert its power and to insure that the people it seeks to rule are under control. As Timothy Mitchell puts it, "the nation state is arguably the paramount structural effect of the modern technical era."⁵ Technology is the field in which the state seeks and wields what Michael Mann has called infrastructural power: "the capacity of the state actually to penetrate civil society and to implement logistically political decisions throughout the realm."⁶ Thus, evidence of advanced technology signifies the state's ubiquitous presence all over its territory, from urban spaces whose environment is constructed around artificial systems, to remote areas where paved roads and electric towers demonstrate the state's outreach far away from the capital.⁷ As Richard Sclove argues, technology mediates social relations on many levels so pervasively that it has become one of the social structures on which contemporary state-society relations are established. Similar to law, market, and *trias politica* institutions, technology can create conditions conducive for the state to perpetuate power relations throughout the entire society. To put it in another way, a technological artifact, as Langdon Winner has critically commented, "can be used in ways that enhance the power, authority, and privilege of some over others."⁸

In the study of Indonesian politics, technology, as a topic, is generally relegated to the periphery in discussions concerned with power and the state. Perhaps this is because technology in this scholarly field is too often associated with economic functions, so that technology is seen to play a mere supporting role, one aimed at increasing industrial productivity. Indonesian studies scholars rarely attempt to shed light on how technology is particularly suited to serve the political interests of those who seek to control other groups or to establish a political order maintaining the status quo. This is not to say, however, that the study of technological politics in the Indonesian context has never been attempted. A handful of works can be noted here. The literature analyzing Indonesia's technological politics generally has extended across colonial and post-colonial periods. Rudolf Mrázek's book of collected essays on technology and nationalism in Indonesia in the early twentieth century is probably the most influential in this category. Epistemologically rooted in the historical study of Indonesian nationalism, Mrázek's study examines a multiplicity of technological artifacts to uncover narratives that reflect intimate interactions between technical artifacts and intellectual consciousness, as it was developing among the indigenous

⁵ Timothy Mitchell, "Society, Economy, and the State Effect," in *State/Culture: State-Formation after the Cultural Turn*, ed. George Steinmetz (Ithaca, NY: Cornell University Press, 1999).

⁶ Michael Mann, "The Autonomous Power of the State: Its Origins, Mechanisms, and Results," *Archives Europeennes de Sociologie* 25 (1984): 185–213.

⁷ James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1999).

⁸ Langdon Winner, "Do Artifacts Have Politics?" in *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago, IL: University of Chicago Press, 1986), p. 25.

people in the Netherlands East Indies. As he covers a range of technologies, such as transportation, infrastructure, and broadcasting, Mrázek convincingly informs us that the Indonesians were not passive receivers of the Dutch engineers' creations. The Dutch technologies were appropriated by the locals and turned into significant political instruments, based on which pro-independence leaders constructed a vision that sought to challenge colonial power.⁹ Thus, technologies provide the means for the imagining of communities. In line with Mrázek's work, but written from a quite different perspective, is Suzanne Moon's analysis. Situating her study in the last forty years of Dutch rule in Indonesia, Moon offers insight into the political significance of technology in the context of the Ethical policies that led to development programs in the Netherlands East Indies. This historical study is distinctive, for it illuminates the ways in which the Dutch used technology to define and build their relationship with the natives.¹⁰ In this effort, political and technological choices were inseparable because both informed the Dutch approach to development policies aimed at extending the colonial rule.

Since the work of both Mrázek and Moon is set in the colonial context, their books present a set of histories that demonstrate the interplay between politics and technology and help map the genealogy of modern Indonesia and its roots in the colonial project. This interplay between politics and technology continued to influence Indonesian politics in the postcolonial era, where the role of technology became more pivotal as it contributed to the construction of ideology and nation-building processes. This was true during the Sukarno period, for Sukarno was himself an engineer, and technology became even more important as a political element under the New Order, when Suharto's ideology of developmentalism altered the political landscape of the nation. Two highly political New Order projects involving the construction of modern technology are worth mentioning here: satellite and airplane manufacturing. Both projects were significant in shaping modern politics in Indonesia during the New Order's authoritarian rule. The fact that both technological projects started precisely at the same time—the Bandung-based airplane manufacturer was officially formed in August 1976 and the Palapa satellite system was launched also in August 1976—was not coincidental. Funding for the two projects was drawn from the same resources—wealth created by the national 1970s oil bonanza—and the ambitious plans were conspicuously animated by Javanese-inspired nationalist imaginings of the New Order state. As Joshua Barker argues, the satellite project, made possible by a generation entranced by satellites, was constructed around a nationalist rhetoric that served the political ambitions of the Suharto regime.¹¹ In the airplane project, I observe a similar political significance whereby airplane manufacturing became the means by which the New Order state established a new symbol of Indonesian nationalism.¹² Both projects, however, were organized by different groups of technological elites with different

⁹ Rudolf Mrázek, *Engineers of Happy Land: Technology and Nationalism in a Colony* (Princeton, NJ: Princeton University Press, 2002).

¹⁰ Suzanne Moon, *Technology and Ethical Idealism: A History of Development in the Netherlands East Indies* (Leiden: CNWS Publications, 2007).

¹¹ Joshua Barker, "Engineers and Political Dreams: Indonesia in the Satellite Age," *Current Anthropology* 46,5 (2005): 703–27.

¹² Sulfikar Amir, "Nationalist Rhetoric and Technological Development: The Indonesian Aircraft Industry in the New Order Regime," *Technology in Society* 29,3 (2007): 283–93.

political powers. The airplane plant was the brainchild of Suharto's protégé, B. J. Habibie. It absorbed comparatively more political resources than the satellite project and figured in a distinctive nationalist discourse that emphasized technological independence. The magnitude of the airplane project reflected the ambitions of the New Order elites and produced far-reaching political consequences that implicated other elite groups, most notably Muslim modernists who were in favor of Habibie's technological obsession.¹³ In sum, high technology played a significant role in the New Order's national discourse and its constellation of authoritarian power and politics. Embodying material and symbolic power, technological development legitimized the Suharto regime and helped justify its longevity. In short, the picture of New Order politics becomes clear only if technological politics is taken into account. And yet, technological politics does not involve the state exclusively because state technocrats are not the only actors in these terrains. The emergence of the Internet in Indonesia during the last years of the Suharto regime provides an interesting case, in which a technical system helped mediate social movements organized by grassroots groups. Merlyna Lim has observed the strategic role of Internet technology in facilitating information exchanges free from state control, a development that marked the end of the New Order. Constructed through complex interactions between engineers and users, the Internet turned into a political instrument for student activists who sought to contest the state's power. It allowed pro-democracy activists to consolidate themselves as an opposition that eventually contributed to the collapse of Suharto's thirty-two-year authoritarian rule.¹⁴

This paper will examine the contest that developed between the state and civil society after the demise of the strong New Order state. As explained previously, nuclear politics in post-Suharto Indonesia is significant to our understanding of the state's governing mentality vis-à-vis civil society in post-authoritarian Indonesia and of the discourses that have grown out of these conflicts. In the wake of a global energy crisis, nuclear power looms large as a panacea and is seen by the post-Suharto state as an "inevitable" option, necessary if the state aspires to rebuild its infrastructural power, which has been worn down since the New Order collapsed. Reinforcing the momentum to go nuclear is the perceived ability of this particular technology to generate not only electricity but also an aura of national prowess that nuclear proponents consider significant for constructing a new national identity.¹⁵ It is this amalgamation of technostuctural superiority and symbolic meaning embodied in nuclear power that, this paper argues, the post-Suharto state is eager to bring about. Concomitantly, civil society groups, by and large empowered by newly established democracy, see nuclear power from a contrasting view—to them, nuclear power is a threatening technology that could expose the Indonesian populace to potentially fatal risks. Armed with information about such risks, which has been supplied by anti-nuclear experts, civil society groups have resisted the state and organized massive

¹³ Sulfikar Amir, "A Message from Asshabirin: High Technology and Political Islam in Indonesia," in *Mediating Piety: Religion and Technology in Contemporary Asia*, ed. Francis Lim Khok Gee (Leiden: Brill Publishing, 2009).

¹⁴ Merlyna Lim, "Cyber-Urban Activism and Political Change in Indonesia," *Eastbound Journal* 1 (2006): 1–19.

¹⁵ For a discussion on this topic, see Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 1998).

opposition actions against the planned construction of nuclear power plants in the archipelago. The following sections will describe how nuclear politics has unfolded and what implications it has for state–society relations in post-Suharto Indonesia.

The Blocked Road to Nuclear Power

Indonesia had only been a sovereign state for ten years when its leaders began to have ambitions to possess nuclear power. The conclusion of World War II had established the ascendancy of nuclear power as a powerful weapon in international war and politics. By the late 1950s, Indonesia was undergoing a state-building process, seeking to establish its ideological foundation. Domestic politics was plunged into turmoil, as competing ideological factions struggled for power. Impatient with the disorder in Indonesia's nascent, democratic government, President Sukarno, backed by the military, unilaterally declared a national emergency that put an end to the fully democratic government. He declared his new version of government to be a "Guided Democracy"—a peculiar amalgamation of nationalism, Islamism, and communism abbreviated as *Nasakom* (Nasionalisme, Agama, Komunisme). As the Cold War began to divide the world, the intimacy of Sukarno and the Indonesian Communist Party (Partai Komunis Indonesia, PKI) led Indonesia closer to the USSR's Eastern bloc, from which Sukarno, a politician trained as an engineer, sought aid to realize his ambitious visions.

Roughly at the same period, the United States was trying to decide whether or not to continue its nuclear program, which had drained billions of dollars from the federal budget without any prospects for eventually turning a profit, since the industry was under the military's control. Leaders in the United States began to consider and discuss involving private industry in developing nuclear technology—a measure that would enable military nuclear projects to continue.¹⁶ To enlarge the market for its nuclear technology, the United States encouraged other countries to develop their own nuclear industries to generate energy for civilian use, offering to share the necessary expertise while withholding information on specific elements critical for conceiving and producing nuclear weapons. It was this initiative that led to President Eisenhower's celebrated speech before the United Nations in 1953, which inaugurated the United States' "Atoms for Peace" program, which was later responsible for the creation of the International Atomic Energy Agency (IAEA), a US-backed body intended to promote nuclear development internationally, as well as act as watchdog, guarding against the proliferation of nuclear weapons.¹⁷

The interests of the United States and Indonesia converged when the United States was carrying out a series of thermonuclear weapon tests in the Pacific Ocean during the early 1950s. Concerned about the radioactive fallout resulting from those tests, in 1954 Sukarno formed a Commission of Radioactivity Research led by G. A. Siwabessy, a radiologist who had recently returned from study in Britain. Made up of several nationalist bureaucrats and military officials, the commission soon developed an

¹⁶ Lee Clarke, "The Origins of Nuclear Power: A Case of Institutional Conflict," *Social Problems* 32,5 (1995): 474–87.

¹⁷ Joseph A. Camilleri, *The State and Nuclear Power: Conflict and Control in the Western World* (Brighton: Wheatsheaf Books, 1984).

interest in nuclear energy and advised Sukarno to endorse the enhancement of Indonesia's nuclear capacity. An engineer, Sukarno promptly agreed and soon elevated the commission's status, so that in 1958 it became the Dewan Energi Atom (Council for Atomic Energy). In the following year, Lembaga Tenaga Atom (Institute of Atomic Energy, LTA) was officially established, with Siwabessy as its director general.

From the outset, Siwabessy and his colleagues at LTA thought that an engagement with IAEA was necessary to gain access to American nuclear technology. In 1961, LTA was given a US\$350,000 grant by the Atoms for Peace Program to install the first reactor in Bandung, about two hundred kilometers from Jakarta. Sitting right next to the Bandung Institute of Technology (Institut Teknologi Bandung, ITB), the 250-kilowatt Triga-Mark II reactor was installed mainly to produce isotopes and as a place to conduct neutron physics experiments. In recognition of the growing importance of nuclear research, in 1965 LTA was renamed BATAN, indicating that it had been upgraded to the ministerial level. To ensure a supply of educated scientists and engineers for future development, the Sukarno government began to send students to study nuclear science and engineering abroad. At the same time, the University of Gadjah Mada in Yogyakarta and ITB responded to these demands by offering a program in nuclear physics and engineering in the early 1960s.¹⁸

For a short moment, Indonesia's nuclear program turned political when Sukarno declared a plan to set off a nuclear weapon before the end of 1965. The success of China's detonation of an atomic device in October 1964 certainly inspired Sukarno. Nevertheless, two factors might have played a role in consolidating Sukarno's questionable plan. One was the perceived threat to Indonesia's security when America became involved in Vietnam and the British supported the new Federation of Malaysia, which was then engaging in a confrontation with Indonesia. Infamously hostile to the West, Sukarno was worried that the Western powers were attempting to extend neocolonialism to Indonesian territory. Another factor emanated from domestic politics. Caught up in the tension between the Army and the PKI, Sukarno sought to gain popular support through the promotion of his nuclear aspirations so as to secure his power.¹⁹ Harnessing the newly created Peking-Jakarta Axis, Sukarno solicited China's assistance to detonate an atomic bomb in the eastern territory of Indonesia, which would be claimed by Indonesia as its own nuclear test. To that end, a small group of scientists and military officials were secretly assigned to develop a nuclear weapon.²⁰ But the plan never came to fruition, and Sukarno's aspiration to build a nuclear bomb evaporated when he lost power in the aftermath of the 1965 coup.

The change in the domestic political landscape after Suharto came to power tilted the direction of nuclear program completely toward peaceful uses. In March 1970, Indonesia signed a non-proliferation treaty and ratified it in July 1978. After being restructured under the authority of the Ministry of Research in 1973, BATAN was given responsibility for the nuclear industry's regulatory and promotional functions. The Suharto regime's friendly relations with the Western bloc opened opportunities for

¹⁸ For an account of the early period of Indonesia's nuclear program, see Daniel Poneman, *Nuclear Power in the Developing World* (London: Allen and Unwin, 1982).

¹⁹ An analysis of this turn of events is presented in Robert M. Cornejo, "When Sukarno Sought the Bomb: Indonesian Nuclear Aspirations in the Mid-1960s," *The Nonproliferation Review* (Summer 2000): 31–43.

²⁰ Interview with Budi Sudarsono, Jakarta, April 19, 2007.

cooperation, through which BATAN could acquire foreign assistance indispensable to improve its human resources and technological capacity, particularly staff and technology related to uranium exploration. In 1969, France stepped in to assist Indonesian efforts to search for uranium in West Kalimantan. A few years later, Germany assisted BATAN in prospecting in West Sumatra. But neither project uncovered sufficient quantities of uranium to make these efforts worthwhile. Later BATAN continued to explore for uranium in Irian Jaya (now West Papua), but the results of this effort were also disappointing.

During the New Order, Indonesia's nuclear research program made substantial progress. When B. J. Habibie, Suharto's closest aide, was named State Minister of Research and Technology in 1978, BATAN was shifted under his jurisdiction, while retaining its status as a nondepartmental agency (*lembaga non-departemen*, LND). Other existing and new research institutes also came under Habibie's control, including the Agency for Technology Assessment and Application (Badan Pengkajian dan Penerapan Teknologi, BPPT), Indonesian Institute of Science (Lembaga Ilmu Pengetahuan Indonesia, LIPI), National Aeronautics and Aerospace Institute (Lembaga Penerbangan dan Antariksa Nasional, LAPAN), and National Coordinating Agency for Surveys and Mapping (Badan Koordinasi Survei dan Pemetaan Nasional, BAKORSUTANAL). Impelled by the ambition to produce advanced technologies, the Habibie administration gave BATAN considerable opportunities to grow. In addition to building the reactor in Bandung, BATAN constructed a research reactor in Yogyakarta, in 1979, named after the national heroine Kartini. The Kartini reactor possessed a capacity of 100 kilowatts and was used to develop accelerator technology and materials processing. A younger reactor, called the Siwabessy reactor, was built in 1987 in conjunction with PUSPIPTK (Pusat Penelitian Ilmu Pengetahuan dan Teknologi, Center for Science and Technology Research), in Serpong, on the outskirts of Jakarta. It is a 30-MW, multipurpose research reactor, utilized for energy-related experiments. Since 1966, BATAN has also conducted isotope and radiation research for agricultural purposes at a research center in Pasar Jumat, a facility equipped with a Canadian-made cobalt radiator. Most of the professional staff positions at BATAN are filled by graduates from nuclear physics programs offered by the University of Gadjah Mada, Bandung Institute of Technology, and the University of Indonesia. Additionally, a College of Nuclear Technology (Sekolah Tinggi Teknologi Nuklir, STTN) was opened in 1985 to provide skilled manpower at the technician levels. To date, BATAN has employed hundreds of researchers with doctoral and masters degrees who work in several of its research centers.

BATAN was quite successful in performing applied research with a variety of isotopes, produced by its reactors, that were useful in the medical and agricultural fields. But the hopes of researchers and officials in BATAN were directed towards building a nuclear power plant in Indonesia. As stated above, the vision of developing Indonesian nuclear power originated during the earlier years of the LTA, but it was not until 1968 that this dream was taken seriously in a seminar, jointly organized by BATAN and the State Utility Company (Perusahaan Listrik Negara, PLN), focused on the possibility of constructing a nuclear power plant in Java. With assistance from the IAEA in 1972, BATAN and PLN created the Joint Preparatory Committee for Nuclear Power Construction, to undertake a series of feasibility studies that looked at issues of planning, siting, and costs. In 1975, this committee selected fourteen spots along the

coastline of Java that it deemed potentially suitable for a nuclear plant. In a 1979 workshop, the list of potential sites was narrowed down to five, ranked as follows: (1) Tanjung Pujul, (2) Muria, (3) Lasem, (4) Situbondo, and (5) Parigi. In the study's conclusion, the committee envisaged eight to eighteen reactors, which would be constructed in Java between 1978 and 1982. Despite public anxiety sparked by the Three Mile Island accident in Pennsylvania, BATAN continued its efforts. In the mass media, BATAN officials expressed their confidence that BATAN's research reactors were safe.²¹ A final committee report was submitted to the government in 1980, but, to the dismay of BATAN officials, the plan was turned down by Suharto on the grounds that nuclear energy was not economically viable at the time, given the limited capacity of Indonesia's electricity grids. A former official in BATAN believed Suharto's rejection of the plan was triggered by US intervention, for the United States feared that these new reactors would give Indonesia the capacity to develop a nuclear weapon. Later, the government granted BATAN the funds to set up the Serpong reactor as compensation for this rejection.²²

A few years later, BATAN continued to seek permission to develop Indonesia's nuclear power capacities. From 1980 to 1983, BATAN collaborated with Italy's Nucleare Italiane Reactori Avanzati (NIRA) to reexamine suitable locations. The study concluded that the Muria peninsula, due to its geological stability, was the best among five locations previously selected. As Indonesia was undergoing substantial economic growth toward the end of the decade, BATAN predicted that the required electric capacity for Java alone would be between 17,000 and 22,000 MW, and BATAN hoped that nuclear energy would contribute up to 4,000 MW of that amount. BATAN emphasized three justifications for developing and using nuclear power: (1) the costs of nuclear-generated electricity would be less than those associated with oil- and coal-generated power; (2) domestic energy resources were not sustainable; and (3) nuclear power could enhance the nation's industrial capability. BATAN proposed to build a pressurized heavy water reactor (PWHR), which had already proven to perform reliably and which provided a certain degree of independence in maintaining the fuel supply because its fuel does not require enrichment.²³

At the end of the 1980s, the New Order government began to view nuclear energy as a reasonable alternative power source and, thus, worth pursuing, despite disagreements expressed by PLN officials who still judged electricity produced by nuclear power to be too costly compared with electricity generated from the burning of oil or coal.²⁴ Thus, in January 1990, the Suharto government announced that Indonesia would build its first nuclear power plant, in Muria. A comprehensive feasibility study of the Muria plant was ordered. A year later, the New Japan Engineering Consultant (NEWJEC), part of the Mitsubishi corporation, was assigned to carry out the study, which covered multiple aspects of the technology, such as safety, waste management, financing, operational management, and geological conditions. The feasibility analysis cost US\$15 million and was completed in December 1993. In the report, NEWJEC

²¹ "Reaktor Kita Aman Deh," *Tempo*, April, 1979, pp. 14–20.

²² Interview with Budi Sudarsono, Jakarta, April 19, 2007.

²³ Budi Sudarsono, "The Future of Nuclear Power in Indonesia," *Energy* 9, 9–10 (1984): 807–13.

²⁴ "Silang Pendapat Tentang Nuklir," *Tempo*, July 25–31, 1992.

advised Indonesia to build twelve 600 MW reactors to be constructed in 1996 and to begin operating the plant commercially in 2003.

But when the NEWJEC proposal reached Suharto in February 1994, it was blocked. Once again, Suharto decided to postpone the construction of the Muria plant for unclear reasons. There is no indication whether Suharto took nuclear power seriously at that point. It is probable that Minister Habibie influenced his decision, for by this time he had rescinded his support for the nuclear power plant and stated that nuclear power was the last thing Indonesia should have.²⁵ It should be noted that the timeline of BATAN's proposal coincided with the timeline for Habibie's ambitious aircraft project carried out at the Nusantara Aircraft Industry (Industri Pesawat Terbang Nusantara, IPTN). IPTN was completing an Indonesian-made airplane to be presented at the fiftieth anniversary of Indonesian independence, a move that was expected to vindicate Habibie's expensive technological ambitions.²⁶ Given the significance of this mega-project to his long-term agenda of technological development, Habibie was most likely approaching the nuclear issue with caution, since he realized that the construction of a nuclear power plant could financially affect the IPTN project.

Recognizing that circumstances were unfavorable, BATAN could only hold back its proposal and continue to undertake a few minor studies, collaborating with Westinghouse and General Electric in 1996 and 1997, respectively. The agency's only achievement during this period was the passage of the Nuclear Act in February 1997 by the Indonesian parliament (Dewan Perwakilan Rakyat, DPR). The Nuclear Act called for the establishment of the Nuclear Regulatory Agency (Badan Pengawas Tenaga Nuklir, BAPETEN). A few months later, the Asian monetary crisis struck, seriously affecting the economies of East and Southeast Asia and hitting Indonesia hard, ruining Suharto's years of accumulated economic achievements. At this point, nuclear power became only a dream, with little chance of being realized.

As we review the thirty years of nuclear programs in Indonesia, two important points need to be highlighted. One is the fact that nuclear advocates repeatedly failed to get nuclear power projects implemented. Given the authoritarian style of Suharto's government, which could have easily silenced public resistance against nuclear power, one may ask why nuclear power development did not proceed as planned for so many years. Two major factors contributed to this result. One was the heavy reliance of the energy sector on oil; this extraction industry had provided the bulk of Indonesia's energy supply since the oil bonanza in the 1970s throughout the mid 1990s, rendering nuclear power unnecessary during this period. The other was related to Habibie's technopolitical regime, a regime that dominated the discourse of technology policy during the Suharto era. As I have briefly explained, for twenty years, Habibie's close relationship to Suharto allowed him to control technological development policies. Unfortunately for BATAN, most of Habibie's ambitious projects, which received far greater attention and revenues than did the infant nuclear industry, were aimed at the development of hi-tech-based industries, most notably the airplane industry. Few of Habibie's technological agendas dealt practically with the issues of energy security or alternative energy. His main agenda was mostly concentrated on the manufacturing

²⁵ "Antiklimaks Nuklir Muria," *Tempo*, January 29–February 4, 1994

²⁶ Amir, "Nationalist Rhetoric and Technological Development," p. 283.

sectors, which Habibie expected would contribute to increasing national prosperity and lowering Indonesian dependency on imported technology.²⁷ Since almost every decision regarding technological development during the Suharto regime was made or vetoed or influenced by Habibie, it was difficult for BATAN officials to find opportunities to implement their plans.

Nevertheless, over the course of thirty years, BATAN did have success in gathering resources in the form of trained technicians, increased technical and administrative knowledge, and a network of nuclear scientists. In other words, although Indonesia has, to date, not produced nuclear-generated electricity, BATAN has done a great deal in establishing a technopolitical regime within a scientific bureaucracy that has survived political upheavals following Suharto's departure, whereas Habibie's hi-tech programs have failed to weather the transition.²⁸ Seen in this light, the preconditions for the generation of nuclear power, considered in terms of bureaucratic and technical resources, were already met by 1998. What remains to be seen is how the political context of the post-Suharto period provides a conducive—yet also combative—atmosphere in which the nuclear regime seeks to influence energy policy discourses for its own benefit.

Nuclear Resurrected

In 2004, Susilo Bambang Yudhoyono triumphed over the incumbent Megawati Sukarnoputri in Indonesia's first direct presidential election. It took no time for Yudhoyono to recognize the vital political and economic challenges he had to cope with in order to stay in the office. He had good reasons to worry. The New Order era was gone, and the DPR had arisen as the most powerful institution in Indonesia, one that could potentially raise barriers to government policies. The impeachment of the late President Abdurrahman Wahid, which cost him his presidency in 2001, and Megawati's failure to win a second term in office, taught Yudhoyono a valuable lesson. Confronted by so many compelling issues, Yudhoyono had to face one instantly: the state budget could no longer handle the enormous subsidy that for years had been provided to keep oil prices affordable for the majority of the Indonesian people. This was a problem he inherited from the previous regime. Rampant corruption and inefficient operation in the oil production sectors, thanks to the involvement of Suharto's children and cronies, had rendered the state-operated oil company, Pertamina, almost completely paralyzed. An attempt to remedy Pertamina's rapid decline was made in 2000, but many observers considered the effort too late, as IMF-induced neoliberal policies were already at work to open up the oil and mining sectors, once monopolized by Pertamina, to increased competition. During Megawati's presidency, the same problem haunted her administration, but she took no action to solve it because she feared losing popularity in the 2004 election.

²⁷ B. J. Habibie, *Ilmu Pengetahuan, Teknologi & Pembangunan Bangsa: Menuju Dimensi Baru Pembangunan Indonesia* (Jakarta: Center for Information and Development Studies, 1995).

²⁸ Following Indonesia's agreement with the International Monetary Fund (IMF), the Indonesian state subsidy underwriting Habibie's pet projects at IPTN was withdrawn, a development that led to huge financial problems in the nation's aircraft industry. Later, the Habibie-led Agency for Strategic Industries (Badan Pengelola Industri Strategis, BPIS), which oversaw several expensive projects, was dismissed by the new government.

When Yudhoyono started his first term, the burden posed by the oil subsidy grew even more heavy, as Indonesia's oil imports began to exceed its exports. At that time, oil-burning plants still produced most of the nation's electricity, contributing 63.8 percent of 28,484.18 megawatt installed capacity. Not surprisingly, Indonesia had to import fuel oil to satisfy domestic energy demands. In 2005, Indonesia's imports of fuel oil and crude oil reached 159 million BOE (barrels of oil) and 118 BOE, respectively. Due to this dire condition, in 2008 Yudhoyono decided to terminate Indonesia's membership in the Organization of Petroleum Exporting Countries (OPEC). In addition, the Yudhoyono government raised oil prices twice, once in March 2005 and again in October 2005. "The government has gone too far!" declared an economist who saw that the hikes caused real suffering for Indonesia's low-income citizens.²⁹ Though the unpopular policy helped the government to save the state budget from deficit, it spawned criticism and protests from the public. A faction in the parliament that opposed this increase organized a movement to impeach the president. But the attempt was short-lived. Vice President Jusuf Kalla coordinated all members of parliament from his party, Golkar, to block the impeachment.³⁰ To ensure that the increases in oil prices would not harm low-income residents, the Yudhoyono government created a cash transfer program, or *Bantuan Langsung Tunai* (BLT), meant to cushion those whose incomes fall under the poverty line from sudden price hikes. Jusuf Kalla himself took a lead in organizing the program. Unfortunately, the plan was largely a failure due to a lack of coordination in distributing the cash.³¹

In this context, where the energy crisis threatened the stability of Yudhoyono's power and that of his predecessors, nuclear proponents found opportunities to resurrect the proposal to build a nuclear power plant in Java. The debut of the nuclear power program had been officially announced in the 2004 National Energy Policy (Kebijakan Energi Nasional, KEN), formulated by the Ministry of Energy and Mineral Resources (Kementerian Energi dan Sumber Daya Mineral, ESDM). This idea had actually originated a few years earlier, when IAEA Director General Muhammad Elbaradei visited Indonesia in December 1999 to meet President Wahid. At the invitation of the Research and Technology Minister Muhammad A. S. Hikam, Elbaradei came to Jakarta to persuade President Wahid to review the possibility of introducing nuclear power as an alternative source of energy for Indonesia in the near future. Wahid responded positively to Elbaradei's lobbying. This surprised many people. In the early 1990s, when Suharto's power was intact, Wahid had threatened to go on a hunger strike at the Muria Mountain if the Muria nuclear plant were to be constructed. But something seemed to have changed his mind after he became president. It is most likely that pro-nuclear bureaucrats succeeded in convincing Wahid to view nuclear power more favorably. One person who might have been largely responsible for Wahid's conversion was Hikam, a firm advocate of nuclear development, who, thanks to his NU affiliation, was personally close to Wahid, a former NU chair. Before Wahid appointed him as the research and technology

²⁹ "Pemerintah Keterlaluan: Kenaikan Harga BBM Melampaui Kemampuan Masyarakat," *Kompas*, October 1, 2005.

³⁰ The fact that the leader of parliament belonged to the party Golkar, which held 25 percent of the parliamentary seats when Yudhoyono was elected, helped the president impose his oil price policy without encountering significant impediments from the opposing faction in DPR.

³¹ "Pembagian BLT Dibayangi Banyak Masalah," *Kompas*, May 28, 2008.

minister, Hikam was a political scientist at LIPI who understood quite well the political significance of nuclear power to Indonesia. When, more recently, he served on a committee made up of experts in nuclear power, Hikam fervently encouraged the government “to put nuclear power at the top of its priorities, for it is a strategic way to fulfill growing electricity demands, but also a symbol of national pride.”³² Wahid himself was undeniably a figure full of contradictions, a weakness that contributed to his impeachment in 2001. Yet the fact that he decided to go along with Elbaradei’s suggestion during his brief tenure in office created renewed momentum for nuclear power development, and when pro-nuclear advocates pressed their cause again the next time, they would wield greater leverage.

The meeting between Wahid and Elbaradei in 1999 led to an agreement that IAEA would assist the Indonesian government to develop plans for the introduction of nuclear power.³³ The IAEA agreed to sponsor a research project that cleverly dealt with multiple energy sources, instead of focusing on nuclear power, to avoid arousing public suspicion and resistance. The project was called the Comprehensive Assessment of Different Energy Sources for Electricity Generation in Indonesia (hereafter, CADES). As stated in the CADES document, the main goal of the initiative was “to assess comprehensively the potential contributions of various energy options to the optimal long-term development of Indonesia’s energy supply and demand consistent with sustainable development.” Starting in 2001, BATAN and BAPETEN jointly directed the CADES project team, which consisted of experts from the Directorate General of Electricity and Energy Utilization (Direktorat Jenderal Listrik dan Pemanfaatan Energi, DJLPE), Directorate General of Oil and Gas (Direktorat Jenderal Minyak dan Gas, DJMIGAS), the Environmental Impact Control Agency (Badan Pengendalian Dampak Lingkungan, BAPEDAL), the National Statistics Bureau (Biro Pusat Statistik, BPS), and PLN. Representatives from nongovernmental organizations were also part of the team, but the proposal did not specifically mention which groups were engaged. Looking at this participant list gives one an impression that the CADES project was the first of its kind successfully to form an interdepartmental team in Indonesia that could handle the task of restructuring the national energy infrastructures. What exactly is the meaning of “restructuring” in this context, given this team’s inclinations? Clearly, the participants intended that a variety of scenarios would be tested in the study, and in *all* these scenarios, nuclear power would figure as a new, key component of the energy mix. Thus, all scenarios revolved around the production of nuclear power, while existing resources were complementary. As stated in the CADES Phase II report:

...[C]onstrained use of fossil fuels and stricter environmental standards quickly tilt the balance in favor of nuclear power. For example, 3.5 GW of installed nuclear capacity would be needed in Java-Bali by 2020 for a hypothetical 2 percent reduction in total CO₂ emissions relative to the High Price Path scenario (IEA1000). Sensitivity tests on critical nuclear power performance parameters (e.g., plant factor and/or capital cost) indicate that near-term advanced reactors

³² Activity Report of the Expert Committee on Nuclear Power, 2006–2007, at <http://www.batan.go.id/bp/Extra/Laporan%20Kegiatan%20KATN%202006.pdf>, accessed July 25, 2007.

³³ Bakrie Arbie, “Status of Nuclear Power Development in Indonesia,” *Asia Nuclear Cooperation Network Newsletter* 2 (2000), at http://www.fnca.mext.go.jp/english/newsletter/fnca_news_no2.pdf, accessed July 22, 2007.

would be part of the least-cost electricity expansion program well before 2020, even without environmental restrictions.³⁴

In the end, the report concludes:

Although the second half of the second decade of the twenty-first century seems far in the future, a decision to move forward with nuclear power needs to be taken soon... In fact, starting with [the target date of] 2015, and accounting for the lead times required for successive steps in the preparatory process for the introduction of nuclear power, [if we wish this to take place] around 2015, this suggests that a "go ahead decision" is imminent. Delaying such a decision would postpone the introduction of nuclear power towards the end of the 2010s.³⁵

It can be inferred from the excerpt above that the push toward nuclear power rests on two assumptions. First, nuclear power is environmentally friendly because it does not produce CO₂. Second, nuclear power is much less expensive compared to conventional energy resources. These assumptions have been pointedly questioned by experts from anti-nuclear groups, as I will discuss below, yet they have induced government officials to feel confident that the multifold advantages of nuclear power are proven. However, as implied by the conclusion of the report quoted above, success in reaping these advantages will depend on swift action on the part of the government, for any delay would compromise the complex planning process. Therefore, according to the report, the urgency to go nuclear is intense.

In May 2004, ESDM issued KEN, the blueprint for a long-term national energy strategy that replaced the 1998 General Policy on Energy Sector (*Kebijakan Umum Bidang Energi*, KUBE). It essentially contains policy prescriptions adopted from CADES's recommendations. In this sixty-page policy paper, nuclear power is emphasized and explicitly recommended as an economically competitive and environmentally friendly energy source that Indonesia must harness to sustain its electricity supply.³⁶ This inclusion of nuclear power into a national energy policy document was unprecedented, for, as described above, earlier attempts to frame nuclear power into national policy had been in vain. Thus, KEN remarkably signified BATAN's achievement, and this success was attributed to the network of CADES members, which spread through all related government agencies. However, the presence of recommendations advocating the development of nuclear power in KEN at this point seemed incongruent with public statements made by Energy and Mineral Resources Minister Purnomo Yusgiantoro. On several occasions, Yusgiantoro had given the impression that he was not fully in favor of nuclear power. He argued that geothermal energy should take priority over nuclear power, given that Indonesia has 40 percent of the world's geothermal deposits.³⁷ In a similar vein, Environmental Minister Rachmat Witoelar suggested that Indonesia postpone considering nuclear

³⁴ "Comprehensive Assessment of Different Energy Sources for Electricity Generation in Indonesia," report, Phase II, prepared by a Team of Experts from Indonesia with the Guidance of the International Atomic Energy Agency, March 2003, pp. 1–3.

³⁵ Ibid.

³⁶ The Indonesian Ministry of Energy and Natural Resources, *Kebijakan Energi Nasional* (Jakarta, 2004), pp. 8 and 11.

³⁷ "Pemerintah Bantah Akan Bangun PLTN Muria Pada 2010," *Tempo Interaktif*, April 18, 2005, at <http://www.tempointeraktif.com/hg/ekbis/2005/04/18/brk,20050418-30,id.html>, retrieved May 1, 2009.

power until 2050. He reasoned that Indonesia's scientists and technicians are still inadequately prepared to handle high-risk technology that "could destroy the whole island altogether if an accident occurs."³⁸

It appeared that the cabinet members who cautioned against nuclear power were merely voicing their personal views, and these opinions did not dampen the overall enthusiasm for nuclear power or prevent it from being seriously considered at higher levels in the policy-making process. One year later, in 2005, Minister Yusgiantoro, eventually accepting the rising popularity of nuclear power, announced Indonesia's "go nuclear" program. The role Minister Kadiman played is crucial at this point. He relentlessly promoted nuclear power to the entire cabinet, describing this energy source as inevitable because it would be necessary to reduce the country's reliance on fossil fuels in the not-so-distant future.³⁹ As a result, less than two years after the publication of KEN, the road to nuclear power became smoother after President Yudhoyono signed Presidential Decree No. 5 in January 2006. Based on the KEN scenario, the decree specified the nation's projected Energy Mix—a proportionate list of the different energy sources Indonesia will utilize by 2025. The mix comprises 20 percent fossil fuel, 30 percent natural gas, 33 percent coal, 5 percent biofuel, 5 percent geothermal, 2 percent "clean" coal, and 5 percent new and renewable energy sources, including biomass, nuclear, micro hydro, solar, and wind.

According to this plan, nuclear power would account for roughly 2 percent of Indonesia's total energy supply within the next twenty years. Although this number appears minuscule compared to the measurements of conventional energy sources, it gave BATAN confidence and leverage to try once more to turn an old dream into reality. In fact, prior to the publication of the decree, BATAN had formulated a chronological map that charted its plan for developing a nuclear power program (see Figure 1, below).

The map proposes several phases for the Indonesian government's development of nuclear power capacity. Ownership designation and bidding processes would take place between 2005 and 2010. The construction of the first reactor would commence in 2010, followed by construction of the second one in the following year. By 2016, if the plan is implemented, the first reactor will operate commercially and the second one will start up the following year. The bidding for the third and fourth reactors will be opened simultaneously. The third reactor will be built in 2018, followed by the fourth one in 2019. Both will start operating commercially sometime before 2025. By then, if all goes according to plan, the Muria plant will be producing up to 4,000 MW of electricity to meet soaring demands for energy across Java and Bali, where the demand

³⁸ Ibid.

³⁹ "Pemerintah Ingin Memiliki PLTN Pada 2017," *Kompas*, May 21, 2005.

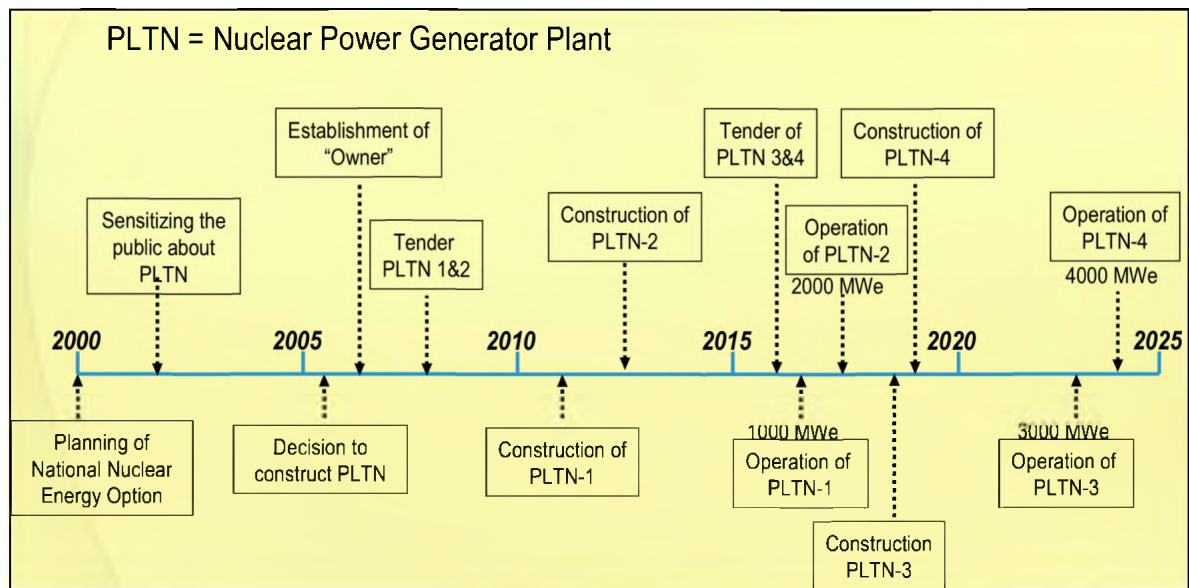


Figure 1. Chronological Map of Indonesian Nuclear Power Program
(Source: BATAN)

is predicted to reach approximately 80 GW by that time. The production cost for each kilowatt-hour is estimated at US\$1,500.⁴⁰ This map appears optimistic, and in fact it had to be revised not long after it was written, as unpredictable events slowed down the process. In the updated map, the early phase has now been delayed for two years. Despite this postponement, BATAN remains optimistic that all their plans are to be realized on schedule. Following the presidential decree in 2006, BATAN published the guide for nuclear power construction, conforming to IAEA regulations, which was entitled "Guidance for the Application and Development of Sustainable Nuclear Energy System in Indonesia." A deputy director at BATAN explained the importance of the guide, hinting that BATAN was ready to move forward:

Because the presidential decree requires a set of technical guidelines for implementation, we have provided this guide based on IAEA standard practices. This guide defines in greater detail basic principles and requirements of the Indonesian nuclear power system, taking into account multiple aspects such as economics, safety, environment, waste, proliferation, and infrastructure. The guide also ensures that we can meet two main goals, namely application and development of nuclear power. Thus, this project is not only for producing electricity, but is also an opportunity for us to enhance our capability for developing nuclear power technology. Therefore we want the national industry to participate so that one day we can become a producer and not just a user of nuclear power.⁴¹

These accomplishments involving the legal and technical aspects of nuclear power development increased the confidence of BATAN. In addition to the domestic supports

⁴⁰ BATAN, *Energi Nuklir Sebagai Bagian Dari Sistem Energi Nasional Jangka Panjang* (Jakarta, 2005).

⁴¹ Interview with Adiwardoyo, Jakarta, January 15, 2007.

BATAN cultivated from the Yudhoyono government and its predecessors, BATAN also received international assistance that gave a further boost to BATAN's efforts to put forth nuclear power in the national energy policy. As mentioned earlier, Elbaradei's 1999 visit marked a watershed in nuclear politics in Indonesia. He advanced the cause further when he visited Jakarta again in December 2006, where he had a chance to meet President Yudhoyono. Trusting that Yudhoyono favored nuclear power, he explicitly told the president, "We are currently supporting Indonesia's preparation for its planned nuclear power plant construction." The main reason behind this approval, as Elbaradei noted, is that Indonesia has, for many years, participated responsibly in the non-proliferation treaty.⁴² In the wake of the Iranian nuclear controversy, Elbaradei's open endorsement reconfirmed the impression that Indonesia's nuclear power program was not an international threat and indicated that nuclear-producing countries could consider Indonesia as a new potential customer. In fact, the signing of a bilateral arrangement between Indonesia and the United States on nuclear safeguards and security in November 2004⁴³ had already fortified the impression that the international community has permitted Indonesia to have its own nuclear power. As a result, ever since Minister Yusgiantoro officially announced in May 2006 that the Indonesian government had reached a firm decision to go nuclear,⁴⁴ representatives from countries such as Japan, South Korea, France, the United States, Russia, and Canada have come to Jakarta to convey their willingness to assist Indonesia in establishing its first nuclear power plant.⁴⁵

Japan and South Korea are apparently the most eager to approach the Indonesian government. These are the nuclear-producing countries in Asia that have succeeded in developing their own reactor designs after years of cooperation with counterparts from the United States. Today both countries are competing for the Asian market, focusing in particular on Southeast Asia, which has recently shown an increased interest in nuclear power.⁴⁶ Japan has a long history of nuclear research collaboration, particularly in relation to Indonesia, and has awarded scholarships to Indonesian students to study nuclear science and engineering at Japan's best technical universities, most notably the Tokyo Institute of Technology. Graduates from this university, it can be said, are among the most elite nuclear scientists in Indonesia to be found in its universities and research institutes.

As a competitor with Japan, South Korea appears determined to secure this lucrative opportunity. Apart from offering cheaper production costs, which greatly attracted Indonesia, given its limited budget, South Korea aggressively promoted its nuclear industry to Yudhoyono's administration through state-owned Korea Hydro and Nuclear Power (KHNP). When President Yudhoyono paid a visit to South Korea in 2005, KHNP invited him to take a look at its Kori plant, which impressed the president, so that he spoke enthusiastically about adopting the Korean nuclear power

⁴² http://www.iaea.org/NewsCenter/News/2006/dg_indonesia.html, retrieved May 10, 2009.

⁴³ <http://nnsa.energy.gov/news/1479.htm>, retrieved May 10, 2009.

⁴⁴ "PLTN Komersial Dibangun 2015-2016," *Kompas*, May 15, 2006.

⁴⁵ Interview with Evita Legowo, Jakarta, August 16, 2007.

⁴⁶ Michael S. Malley, "Bypassing Regionalism? Domestic Politics and Nuclear Energy Security," in *Hard Choices: Security, Democracy, and Regionalism in Southeast Asia*, ed. Donald K. Emmerson (Stanford, CA: Shorenstein Asia Pacific Research Center, 2008).

designs. Following the visit, KHNP and PLN agreed to engage in joint research to assess the technical, financial, and environmental aspects of the Muria plant. Another major step was taken in 2007, when KHNP brokered a deal with the private Indonesian company Medco Energi, owned by oil tycoon Arifin Panigoro. KHNP and Medco carried out a two-year feasibility study for the Muria plant to determine its financial and technical specifications. Medco's involvement in this mega-project is considered necessary to the success of the plan to build the Muria plant, since BATAN expects that private sector contributions will make up the bulk of the funds needed. Medco has shown keen interest in engaging in this multibillion-dollar enterprise, for which it created a special unit, led by a former BATAN scientist, which was established to oversee technical and financial preparations for development at Muria.⁴⁷ Medco has committed to allocate US\$3 billion to show that, as Panigoro said to the press, "We mean business."⁴⁸

To mediate between these different actors, ESDM submitted a proposal to the president's office recommending that a task force be formed to plan and oversee the whole production process for Indonesian nuclear power. Once approved, this interdepartmental task force, comprising experts from related fields, will be granted full authority to decide questions having to do with location, ownership, and financial arrangements for Indonesia's nuclear power plants.⁴⁹

Political Push

In early 2007, protests against nuclear power began to break out in Jakarta and small towns across the Muria peninsula. The resurrection of BATAN's plan to build reactors in Muria had reawakened anti-nuclear movements that had been idle for some time, as I will discuss below. BATAN officials were deeply aware that their plans to bring nuclear power to Indonesia would not proceed unchallenged. Yet, BATAN officials have been confident that what they have imagined will be realized sooner or later, a conviction that rests on the growing popularity of nuclear power among political elites in Jakarta, more so than it was at the height of the Suharto regime. BATAN is even more confident now as a result of the endorsement it has received directly from President Yudhoyono, who on May 14, 2007, visited BATAN's research reactor in PUSPIPTEK, Serpong, despite intensifying controversy over nuclear power that was being reported in the media. In Indonesian bureaucratic culture, a presidential visit to an event or a project site is interpreted as a symbolic blessing granted by the most powerful man in the country. Yudhoyono's tour of BATAN's research facilities in Serpong was politically significant to the whole nuclear power program, for it was interpreted as a vote of support from the nation's leader. Now, in 2010, BATAN officials believe the implementation of Indonesia's maiden nuclear power program is only a matter of time.

What justifies BATAN's optimism? In fact, Yudhoyono's speech at PUSPIPTEK made no mention of the use of nuclear power. However, Yudhoyono is known to be

⁴⁷ Interview with Arnold Soetrisnanto, Jakarta, April 17, 2007.

⁴⁸ "Medco Serius Bangun Pembangkit Nuklir," *Koran Tempo*, July 27, 2007.

⁴⁹ Interview with Evita Legowo, Jakarta, August 16, 2007.

very cautious about saying anything publicly that could harm his image and popularity. Although the president made no explicit statement about nuclear energy, some lines in his speech hinted that he favored it. This attitude is implicit in several points he made. He started by expressing appreciation for BATAN scientists:

Researchers are heroes behind the screen. It is unfortunate that very few people appreciate what they do and how scientific innovation, invention, and discovery have changed the world. Hence, I have always urged our scientists to produce useful innovations, as many as they possibly can, primarily because I am a true believer that solutions to world problems can be developed through technology. [Thus], we need to integrate technological innovations to cope with increasingly complex problems today.⁵⁰

Highlighting the complexity of global problems and the important role of (nuclear) scientists, he then recommended that people use unconventional approaches in developing solutions for those problems:

Let's change our paradigms. We have to think outside the box. Do not stick to conventional ways. Let's understand the complexity in today's world harnessing the strength of our mind. With this we can create alternative options to solve those problems.⁵¹

His emphasis on "thinking outside the box" is interesting in this context. One could equate this "think-outside-the-box" approach with BATAN's discourse in using "nonconventional" techniques for energy production, a discourse in which nuclear power is touted as a new form of energy, distinct from conventional resources such as gas and oil. Yudhoyono's approval of nuclear power became more apparent when he said:

Fossil fuel is fading away. You watch CNBC, CNN, and BBC, the oil prices go up \$72 per barrel. This is a nightmare. Middle East countries are having a party now, but how about the rest of the world? With increasing [energy] demands for household, transportation, industry, etc., can we rely on renewable resources such as wind, hydropower, ocean waves, solar cell, and even geothermal? Are those resources sufficient enough to replace fossil oil?"⁵²

The last line from the passage above clearly shows that Yudhoyono was not convinced that the renewable resources promoted by environmental activists who oppose nuclear power would yield sufficient energy to meet soaring demands in domestic and industrial sectors. Yudhoyono's speech indicated that nuclear power, perceived as an ostensibly "unconventional" form of technology, is the energy source Indonesia must resort to for remedying the present energy crisis. These statements undoubtedly signify Yudhoyono's political commitment to back the proposed construction of a nuclear power plant in Central Java.

The encouraging messages Yudhoyono delivered in his Serpong speech certainly heartened nobody more than BATAN's officials. In the post-Suharto era, no president

⁵⁰ See Yudhoyono's speech at BATAN available at <http://www.presidensby.info/index.php/pidato/2007/07/04/686.html>, accessed February 9, 2010.

⁵¹ Ibid.

⁵² Ibid.

before Yudhoyono had visited BATAN research centers, nor had any of them communicated such a firm commitment, even if indirectly stated. Approval from the president's office is requisite for development programs involving as much capital and technical resources as nuclear power plants do. At the same time, since Indonesian democracy has grown more robust since the fall of Suharto, approvals from the executive body are necessary, but not sufficient, to signal a green light for public-funded investments. Democratic movements that successfully ousted Suharto brought about a dramatic change in the institutional structures, shifting power to the national legislature. As a result, the DPR is as powerful as the executive branch, particularly in decision-making.⁵³ It is this new political reality, in which DPR holds sway in the politics of policy-making, that gives nuclear advocates added leverage to push forward the nuclear power agenda. From the outset, DPR set no substantial barriers to the integration of nuclear power into the national energy policy. Pro-nuclear members of parliament gave substantial support to BATAN's long-term proposal, and that support resulted in legislation: the 2007 "Act for Long-Term Planning of National Development, 2005–2025." This act resurrects the New Order's development planning practices, which had been abandoned for a few years before being readopted by the Yudhoyono government. What nuclear advocates found particularly gratifying is that the act states Indonesia is supposed to begin operating nuclear power plants for the purpose of generating electricity between 2015 and 2019.⁵⁴ This is truly a big "push" for the BATAN program. The act provides constitutional legitimacy to pro-nuclear bureaucrats that allows them to proceed with the nuclear power program as proposed in BATAN's chronological map. As Minister Kadiman stressed, "Developing nuclear power is constitutionally mandatory. If the government is not intent on or fails to accomplish this long-term goal, it will be rewarded with impeachment."⁵⁵

Members of DPR's Commission VII, which oversees policies concerned with the science, technology, environment, and energy sectors, was largely responsible for forging the parliament's strong support for nuclear power. In July 2007, the commission legalized the National Energy Act in DPR's plenary session to facilitate the implementation of the Indonesian nuclear project. The act calls for the formation of a National Energy Council, led by the president, whose members would come from energy-related government agencies; university, industry, professional, and environmental groups; utility companies; and consumer associations. This specific act is meant to provide a legal instrument for securing the continuity of the national energy supply provided by different sources, including nuclear. Here, the role of nuclear power is viewed as strategic and significant, due to its large production capacity and presumed environmental friendliness.

It should be noted that not all members of Commission VII agreed to advocate nuclear power to the executive. Two members of the commission openly voiced critical opinions of BATAN's proposal to erect a nuclear power plant in the Muria peninsula. One was Alvin Lie from the National Mandate Party (Partai Amanat Nasional, PAN), a

⁵³ Patrick Ziegenhain, *The Indonesian Parliament and Democratization* (Singapore: Institute of Southeast Asian Studies, 2008).

⁵⁴ The Law No 17/2007 on the Long Term National Development Program, 2005–2025.

⁵⁵ "Menristek: PLTN Amanah UU," *Antara*, March 13, 2008, at <http://www.antara.co.id/arc/2008/3/13/menristek-pltn-amanah-uu>, retrieved May 12, 2009.

majority of whose constituents reside in the Muria region. The other was Sonny Keraf from the Indonesian Democratic Party of Struggle (Partai Demokrasi Indonesia–Perjuangan, PDI–P), an ethics professor at Jakarta’s Atma Jaya University and former environmental minister in the Megawati administration. Both were vocal in expressing the disapproval of local residents living in the vicinity of the planned site for the nuclear plant. In July 2007, Lie and Keraf paid a visit to Balong village in the district of Jepara, near a location that had been designated as one of the top potential sites for the Muria plant. Pressured by local activists there, both signed a political contract, a sort of written commitment to take necessary efforts in the interests of Balong residents to stop the nuclear project.⁵⁶ Despite widespread media reports of Lie’s and Keraf’s dissenting voices, the majority of commission members took the opposite stance. For instance, PAN’s Tjatur Sapto Edy described his colleagues’ dissent as meaningless: “As politicians, they only follow the wind blown by the media to appeal to their constituents.”⁵⁷ He argued that the commission’s decision to approve nuclear power was rationally calculated and politically important for Indonesia’s future. He elaborated on this point:

According to our calculations, the demands for electricity in Indonesia by 2025 will be 100 GW. How are we going to be able to meet such a tremendous demand? Alternative energy, such as wind or solar, is definitely not sufficient to meet the target. In contrast, nuclear energy has large producing capacity and is thus the only available option we have. We may not have the capability [to operate a nuclear power plant] at the present time, but within the next ten years we must have it. What is more significant is that this project reflects our nationalism. If Indonesia has no nuclear power, then our country will be at a great loss. Vietnam is going to have nuclear power by 2015, and Malaysia by 2025. By the time they succeed in their nuclear projects, while we end up with nothing just because we are too scared, the whole people will feel embarrassed while suffering from an energy crisis. Thus, considering future possibilities, I am determined that Indonesia must develop nuclear energy. If we do not have a vision in that direction, Indonesia will be in jeopardy.”⁵⁸

To better understand nuclear politics at the parliamentary level, one should examine the way in which parliament members from the Prosperity and Justice Party (Partai Keadilan Sejahtera, PKS) shaped nuclear discourses. This group of politicians was most influential in setting up the Commission VII’s agendas, and the Islamic PKS has been a more ardent actor than other political parties in promoting nuclear power in DPR. PKS was born from a network of Muslim student groups whose preaching activities from the 1980s throughout the 1990s were mostly organized in campus mosques, such as Salman Mosque at Bandung Institute of Technology and Shalahuddin Communion at University of Gadjah Mada, in Yogyakarta.⁵⁹ In the

⁵⁶ “DPR Cek Warga Jepara Yang Diklaim Pemerintah Dukung PLTN,” *Okezone.com*, July 23, 2007, at <http://news.okezone.com/index.php/ReadStory/2007/07/23/1/35015/dpr-cek-warga-jepara-yang-diklaim-pemerintah-dukung-pltn>, retrieved May 12, 2009.

⁵⁷ Interview with Tjatur Sapto Edy, Jakarta, September 12, 2007.

⁵⁸ *Ibid.*

⁵⁹ For a complete account of PKS’s history, see Ahmad-Norma Permata, “Islamic Party and Democratic Participation: Prosperous Justice Party in Indonesia (1998–2006)” (PhD dissertation, Department of Political Science, Westfälischen Wilhelms-Universität zu Münster, 2008).

aftermath of Suharto's fall, these groups, motivated by a vision of Islamic politics, decided to transform their religious organization into a political party aimed at promoting Islamic values. The party was initially named the Justice Party (Partai Keadilan, PK), and its ideology was largely imported from the Muslim Brotherhood in Egypt. In the 1999 elections, PK won 1.7 percent of the votes in the parliament, but in the 2004 elections, with its new name—Prosperous Justice Party—the party's share of the vote soared to 7.3 percent. Many reporters and analysts have attempted to expose PKS's alleged hidden agenda to implement *sharia* law in Indonesia. Less discussed is another aspect of the party, namely PKS's technocratic interests. Looking at the party's cadres and its political goals, one comes away with the sense that PKS is as much technology-minded as oriented toward Islam. As it is an urban-based party, the majority of PKS's constituents are well-educated professionals. This is in stark contrast to the constituencies of Megawati's PDI-P or Wahid's National Awakening Party (Partai Kebangkitan Bangsa, PKB), for instance, the majority of whose supporters live in rural areas like the Muria Peninsula. A considerable number of engineers and scientists who obtained doctoral degrees from universities abroad constitute the main functionaries of the PKS. They either teach at universities or work as researchers in research centers. One example is PKS's first chair, Nurmahmudi Ismail, an agricultural engineer educated at Texas A&M University, who spent years as a researcher at BPPT. These engineers and scientists are strongly influential in dictating the party's policies, especially those pertaining to science and technology. In the discourse regarding nuclear power, PKS is perhaps the most influential advocate for its approval by parliament. The strong voice of one representative from PKS who served on the Commission VII, Wahyuddin Munawir, reflects the party's commitment to championing nuclear energy. A geophysical engineer who graduated from the Bandung Institute of Technology, Munawir considers nuclear development to be an urgent priority, not only because Indonesia needs to generate electricity, but, more importantly, because nuclear power "can be harnessed in research activities in food production, plant, industrial material, construction, etc.," which produces "enormous multiplier effects to technological development."⁶⁰ Interestingly, he uses the same argument to explain the cause of the Iranian nuclear crisis. He argues:

Looking at the great benefits of nuclear power, it comes as no surprise that an oil-rich country like Iran is determined to produce nuclear power. Nuclear weaponry is not the only factor causing the Western powers to worry about Iranian nuclear development, but its multiplier effects, i.e., the quality of human resources and other strategic researches, [are also important factors]. If Iran has a high quality of human resources, the Western states won't feel happy.⁶¹

The case of Iran is relevant to discuss briefly here. When the United Nations Security Council pressed President Ahmedinajad to terminate Iran's uranium enrichment program, PKS exhorted Yudhoyono to oppose the council's resolution. But to the dismay of the PKS members, Yudhoyono followed his advisors' recommendation to approve the resolution. A member of the DPR Commission VII from PKS responded with disappointment: "Morally and politically, we should have

⁶⁰ Wahdyin Munawir, "Kenaikan TDL, PLTN, dan Masa Depan Indonesia," Fraksi PKS DPR RI, at <http://fpcs-dpr.or.id/main.php?op=isi&id=1183>, retrieved May 12, 2009.

⁶¹ Ibid.

supported Iran because of the right of Iran as a sovereign state to decide what it needs to do, free from interventions by other states.”⁶² The underlying argument to justify Indonesia’s support of Iran, in the view of the PKS, is that Indonesia’s nuclear program might also be halted, like that of Iran, due to global Islamophobia aimed, by the West, at Islamic nations in Southeast Asia as well as the Middle East. As noted earlier, such a fear is farfetched, since Indonesia has already secured a green light from IAEA and some Western countries. Nonetheless, underneath PKS’s enthusiasm for nuclear power and its demonstrated solidarity with the Iranian nuclear program is the fact that no other party has more members who are nuclear scientists than does PKS. One leading example is Mulyanto, a PKS cadre who obtained a doctoral degree in nuclear science from Japan. Mulyanto served as a scientific aide to Agriculture Minister Anton Apriyantono, also a PKS cadre, who teaches at the Bogor Institute of Agriculture. Along with other leading members of PKS, Mulyanto co-founded the Institute of Science and Technology Studies (ISTECS), a PKS-affiliated organization that vigorously promotes the integration of science and technology with Islamic values. Currently, ISTECS has about four hundred members completing graduate programs in various universities in Japan.⁶³ Dozens of them are studying nuclear science and engineering funded by scholarships from the Japanese government, and a few work as post-doctoral researchers at nuclear facilities in Japan. They all plan to return home and to contribute their expertise to developing nuclear energy research in their home country.⁶⁴ While Mulyanto is officially affiliated with PKS, other nuclear scientists—such as Asnatio Lasman, who is now serving the chair of BAPETEN—engage themselves as loyal supporters. Lasman is known to be close to the elite circle of PKS leaders. In 2001, PKS promoted him to President Megawati as a candidate to become the research and technology minister, but ultimately Megawati appointed PAN’s Hatta Rajasa.⁶⁵ Having the largest army of nuclear scientists, PKS undoubtedly remains the strongest defender of nuclear power, though the party elites are deeply aware that resistance against nuclear power is equally strong from civil society groups, a delicate situation that, according to a PKS head, “requires socially acceptable approaches to resolve.”⁶⁶ However, given PKS’s considerable political influence in the legislature, as well as the executive branch, the “go nuclear” program is likely to proceed with formidable force,⁶⁷ and the presence of PKS in Indonesian politics⁶⁸ will continue to shape the dynamics of nuclear politics in contemporary Indonesia.

⁶² “Iran Siap Bantu Indonesia untuk Kembangkan Teknologi Nuklir,” *FPKS Online*, at <http://fpks-dpr.or.id/main.php?op=isi&id=953&kunci=26>, retrieved May 30, 2009.

⁶³ “PKS Dikenal Menguasai SDM Iptek di Jepang,” at *PKS Online*, at <http://www.pks.or.id/2006/main.php?op=isi&id=2949>, retrieved May 12, 2009.

⁶⁴ Conversation with Sidik Permana, Tokyo, February 21, 2009.

⁶⁵ “Kabinet Diumumkan Hari Jumat,” *Kompas*, August 2, 2001.

⁶⁶ Interview with Sohibil Iman, Jakarta, November 12, 2009.

⁶⁷ In the 2009 elections, PKS joined a large coalition that supported Susilo Bambang Yudhoyono in his successful bid for a second term. In return, PKS demanded several ministerial positions, including Research and Technology, which the new president granted. For his 2009–2014 cabinet, Yudhoyono appointed PKS’s Suharna Surnapranata to replace Kusmayanto Kadiman.

⁶⁸ While other Islamic parties, such as PPP and PBB, have drastically lost votes, PKS succeeded in slightly increasing its percentage of the votes in the 2009 elections.

Risk and Resistance

The issue of nuclear power does not exclusively belong to nuclear experts because this technology poses constantly threatening dangers that cannot be made to vanish, even by the shutting-down of the reactor. There are no guarantees the experts are able to fully contain nuclear hazards ... It is not a problem for the experts, but for the public, thus the public resistance must be taken seriously. Such resistance touches upon the interests of the whole population, as the possible long-term hazards are as real as the benefits it is claimed to deliver.⁶⁹

Abdurrahman Wahid wrote the warning passage quoted here over a decade ago. At that time, in the mid-1990s, he was the chair of Nahdlatul Ulama and Suharto's power had reached its peak. His statement hit the core of the problem—he questioned the extent to which scientific experts could be trusted to protect the safety of citizens. For Wahid, the need for ordinary citizens to be involved in dialogues and to protest against potential risks posed by government projects was not negotiable. Wahid's remarks poignantly reflected the people's concerns over living under technocratic rule—a system of authority controlled by scientific experts. A few years before his 1999 conversation with Elbaradei, which was conducted in Arabic and led to the ongoing nuclearization process, Wahid appeared to be a hardcore critic of nuclear power and was involved in an anti-nuclear movement organized by pro-democracy activists in Jakarta and in Central Java.

From the outset, the Muria plant proposal evoked public apprehension, particularly in the wake of the Chernobyl nuclear meltdown in 1986. But local people were silenced by the oppressive power of Suharto's regime, which was inclined to suppress public resistance, often with a violent response, as it demonstrated in many cases where the public protested against development projects, such as dam constructions and highway projects. However, when the Central Java governor openly announced in 1994 his willingness to host a nuclear power plant in his province, it instantly sparked protests from student activists in the region. This was a time when Indonesian student movements in general began to consolidate their opposition against Suharto; four years later, growing opposition would lead to the president's ouster.

In Jakarta, a number of student enclaves sought to challenge the state's plans for nuclear development, gathering support from larger student movements and, in this way, beginning to forge the anti-nuclear alliance. In 1994, these groups, along with those from cities traditionally known for strong activism, such as Yogyakarta and Salatiga, organized a national meeting, held in Cibubur, on the outskirts of Jakarta, which was attended by student groups from various regions. The meeting resulted in the formation of the Indonesian Anti-Nuclear Society (Masyarakat Anti Nuklir Indonesia, MANI), designed as an umbrella organization for all anti-nuclear groups. Over the course of five years, MANI activists in Jakarta and Central Java organized several events aimed at raising public awareness of the nuclear issue. The recalcitrant Forum Demokrasi (FORDEM), led by Wahid, took part in the movement because its

⁶⁹ Abdurrahman Wahid, "Kata Pengantar," in *Pembangunan PLTN: Demi Kemajuan Peradaban?*, ed. Iwan Kurniawan et al. (Jakarta: INFID, WALHI, and Yayasan Obor Indonesia, 1996).

members viewed nuclear power as an anti-democratic technology. Suharto's decision to postpone the construction of the Muria plant in 1994 did not dampen the group's protests. MANI continued to run anti-nuclear campaigns, driven by suspicions that BATAN would proceed with its nuclear power agenda, but conduct its activities under the public radar. In 1996, these activists hosted the No Nukes Asian Forum (NNAF) in three cities—Jakarta, Solo, and Yogyakarta—to increase their visibility domestically while expanding their networks globally. In spite of its high spirits, MANI was short-lived. The organization disintegrated partly because of a crackdown by the New Order state on student activists in the wake of the July 27, 1996, incident in Jakarta—a state-sponsored violent purge of anti-Suharto supporters that caused the deaths and disappearance of dozens of activists.⁷⁰ Though under pressure from the New Order military, MANI leaders kept monitoring the progress of nuclear policies up until the passage of the 1997 Nuclear Act. After *reformasi* in 1998, anti-nuclear activism declined due to internal conflicts.⁷¹

In 2002, Minister Hatta Rajasa, Kadiman's predecessor, announced new plans to reintroduce nuclear power following the IAEA recommendations. This instantly reawakened the anti-nuclear movement. It even gained greater strength this time around, reinforced by a post-Suharto flourishing of civil society. A factor that distinguishes the post-Suharto anti-nuclear movement from its predecessor lies in the scale and level of mobilization and group diversity. Today, the anti-nuclear alliance functions as an organized resistance that has been able to build cooperative networks at various levels using a number of methods to mobilize grassroots groups. This alliance is structurally grounded in an extended network of opposition groups from Jakarta that stretches all the way to Jepara.⁷² At the national level, three civil society groups committed to fighting against nuclear power have come to the fore. The first group, Wahana Lingkungan Indonesia (WALHI, Indonesian Forum for the Environment), a flagship of environmental NGOs in Indonesia, globally linked to the Friends of the Earth, has for long been known as a bastion for nuclear critics. Specifically dealing with the resurgence of plans to develop nuclear power in the region, WALHI representatives in Central Java actively run anti-nuclear campaigns, which reach far down into local villages where WALHI associates help Balong village residents organize protests against the presence of BATAN activities (discussed below). The second significant group is Greenpeace Indonesia, which began provocative environmental campaigns in 2000. Following the lead of their mother organization, Greenpeace Indonesia activists are determined to keep Indonesia free from nuclear power by utilizing their global networks of resources, from which local Greenpeace members create a variety of imaginative ways to raise public awareness of nuclear risks. The third group is the resurrected Indonesian Anti-Nuclear Society, now bearing a new acronym, MANUSIA, meaning "human." MANUSIA is composed of professionals and academics, and it is dedicated to bringing the 1997 Nuclear Act before the Constitutional Court, as its members see the act as a flawed product of an

⁷⁰ See Gibran Ajidarma and Irawan Saptono, *Peristiwa 27 Juli* (Jakarta: Institut Studi Arus Informasi/ Aliansi Jurnalis Independen, 1997).

⁷¹ Interview with Dian Abraham, Jakarta, May 21, 2007.

⁷² For a full discussion on the structure and epistemology of anti-nuclear movements in the post-Suharto era, see Sulfikar Amir "Challenging Nuclear: Antinuclear Movements in Postauthoritarian Indonesia," *East Asian Science, Technology, and Society* 3,2 (2009): 343–66.

authoritarian regime, a document marred by false assumptions and outdated regulations. By pressing for a review of the act, MANUSIA hopes to be able to delay, if not eliminate altogether, the nuclearization process that “could potentially result in catastrophe should the government insist on proceeding.”⁷³ While the aforementioned civil society organizations confront the state’s nuclear agendas through militant, well-organized actions, more loosely organized ad hoc groups have also surfaced to oppose the Muria proposal. A group of Jakarta-based public intellectuals, the Society Concerned by Nuclear Risk (Masyarakat Peduli Bahaya PLTN), exemplifies such groups.⁷⁴ In their February 2008 declaration, these intellectuals fiercely demanded that the Muria nuclear plant construction plans be abandoned and, furthermore, called for a review of the 2006 National Energy Act, which lays the groundwork for the proliferation of future nuclear plants in Indonesia.

Elements of the anti-nuclear alliance have collaborated in organizing anti-nuclear campaigns in a variety of public spheres. Raising economic, political, social, and ethical problems that could result from the state’s nuclear ambitions and the possibility for potential disasters that threaten the life of people at the local, national, and regional levels, activists invariably question the underlying assumptions that help justify introducing nuclear power in Indonesia. The central argument mustered against the proliferation of nuclear power in Indonesia cites the perceived risks inherent in nuclear power, risks that, according to anti-nuclear activists, are too enormous for the state to handle and solve. Thus, the conflict between anti-nuclear groups and pro-nuclear technocrats revolves around the perception of risk, which Mary Douglas and Aaron Wildavsky studied decades ago⁷⁵ and found to be influenced by a broad range of social and cultural conditions. It is useful to draw an observation from the sociology of risk, a field of study that examines the ways in which different rationalities, logics, interests, and lived experiences result in heated debates about risk assessments. In the debates between pro- and anti-nuclear groups, arguments tend to focus on four kinds of key factors: geological, technological, environmental, and institutional. The most apparent, and probably more terrifying, risk factor concerns Indonesia’s geological stability, or, more aptly, instability. The fact that Indonesia sits precisely on the Ring of Fire, an area encircling the basin of the Pacific Ocean, characterized by frequent earthquakes and volcanic eruptions, is obvious and must raise doubts about the safety of the Muria nuclear plant. BATAN experts appreciate that Indonesia’s geological conditions constitute an important factor that must be taken into account and thoroughly investigated. Accordingly, the feasibility study that BATAN conducted with assistance from IAEA and other international agencies included an analysis of volcanic and seismic hazards. A meteorology station was installed in Ujung Watu, of the Jepara district, to monitor Mount Muria. A series of geological studies at the early stage concluded that Mount Muria was a dormant volcano and relatively safe as a site for a nuclear power plant, although, as one of the geologists hired to assess seismic risk clearly pointed out, the last eruption, which occurred two thousand years ago, is

⁷³ Interview with Dian Abraham, Jakarta, May 21, 2007.

⁷⁴ This group was declared, among others, by Frans Magnis Suseno, Saparinah Sadli, Bambang Hidayat, B. Herry Priyono, and Karlina Supelli.

⁷⁵ Mary Douglas and Aaron Wildavsky, *Risk and Culture* (Berkeley, CA: University of California Press, 1982).

"considered sufficiently recent to rule out the assumption that the volcano is extinct."⁷⁶ Anti-nuclear activists have not been convinced that Mount Muria is a safe site for a nuclear power plant. The chair of the Jepara-based anti-nuclear group Earth Nurturing Society (Masyarakat Reksa Bumi, MAREM), Lilo Sunaryo, pointed to an unpublished study by two geologists from ESDM's Center for Research and Development of Marine Geology. Using satellite images, the geologists found that the Muria peninsula sits between two adjacent tectonic plates that experienced displacements during the Paleocene and Late Neocene periods. These tectonic processes resulted in the pressurization of the foundation underneath. Over time, these conditions increase the force that can instantly release magma in massive volumes through the fault line. Citing this study, Sunaryo questioned BATAN's confidence: "The research clearly tells us that Mount Muria is vulnerable to geological disaster. How could they [BATAN experts] claim Muria is safe?"⁷⁷ Another Indonesian geologist holds similar skeptical views. His study identified two faults along the borderline of Central Java, located in a squeezed region. He believes that it is very likely that the strata of the faults have become uplifted, a condition that could result in a disaster affecting the whole Muria region.⁷⁸

The groups that advocate for and oppose nuclear power also dispute questions regarding technology. The dispute concerns the risks inherent in nuclear fuel processing. With regard to this issue, BATAN relies on risk assessments that its members drew from scientific calculations focused on standardized technical structures, as regulated by IAEA. BATAN officials also contend that, over the past three decades, nuclear scientists and engineers have developed new reactor designs with improved safety systems, such as the so-called quake-friendly reactor designs. BATAN's deputy chairman has stated that this design would be appropriate for Indonesia's unique geography, as it involves a mechanism able to avert nuclear meltdown in the event of an earthquake or equivalent disruption.⁷⁹ These new designs constitute the latest stage of the so-called "third generation" of nuclear reactors, whose "safety systems are designed by taking into account a variety of risk factors, from natural disaster, to human error, to terrorist attacks."⁸⁰ Given these advances in technology, BATAN officials firmly believe that the public's fear of their proposed nuclear power plant is exaggerated and unfounded, for "nuclear technology is inherently safe."⁸¹ To reinforce this point, one BATAN expert pointed to the standard construction of a nuclear power plant, which nuclear engineers describe as the "multilayered protection system."⁸² BATAN experts reckon that sophisticated protection systems substantially reduce the likelihood for nuclear accidents, such that the threat of a nuclear disaster is less than the collective threat of, for instance, airplane

⁷⁶ Alexander McBirney et al., "Volcanic and Seismic Hazards at a Proposed Nuclear Power Site in Central Java," *Journal of Volcanology and Geothermal Research* 126,1-2 (2003): 11-30.

⁷⁷ "Perlu Bahtsul Masail Soal PLTN," *Suara Merdeka*, July 28, 2007.

⁷⁸ "Kondisi Jateng Berbeda: Perlu Diteliti Secara Mendalam," *Kompas*, August 31, 2007.

⁷⁹ Conversation with Adiwardoyo, Singapore, November 2, 2007.

⁸⁰ Interview with Ferhat Aziz, Jakarta, December 11, 2008.

⁸¹ Ibid.

⁸² Suharyo Widagdo, "Momok Nuklir," *Republika*, March 13, 2008.

crashes and car accidents. As Minister Kadiman once quipped to an online reporter, "Nuclear is safer than smoking,"⁸³ a statement that instantly sparked a controversy.

Anti-nuclear activists find the claim that nuclear power is inherently safe to be horribly misleading. Iwan Kurniawan, a former BATAN scientist who later turned anti-nuclear, highlighted the fact that nuclear power was historically developed from weapons of mass destruction, and that the energy it generates is extracted from an unstable motion of nuclear compounds that is impossible to predict, let alone to control. As a result, generating energy from this source constantly produces the risk of radioactive leakage.⁸⁴ The Chernobyl nuclear accident is a horrendous example that anti-nuclear activists display to their audiences when conveying the dangers of nuclear power to the public. This is what one WALHI activist termed *teknologi berbasis bencana* (disaster-based technology).⁸⁵ Anti-nuclear activists also challenge the claim that nuclear power is environmentally friendly, as touted in the CADES report. While it is true that nuclear energy does not produce carbon emissions, "the waste it yields remains highly toxic and proved to be difficult to dispose of safely, as shown in the messy problems technologically advanced countries like the United States and Japan have to tackle."⁸⁶ Moreover, "the safety system of the nuclear power plant designed to avert nuclear accidents is unable to guarantee that such accidents will never happen."⁸⁷ A Greenpeace activist remarked that even in Japan—a country known for the discipline of its people—the occurrence of nuclear mishaps in nuclear power plants is not negligible. According to data collected by the Tokyo-based Citizens Nuclear Information Center, there were twenty-five major incidents at nuclear facilities in Japan from April 2007 to March 2008 alone.⁸⁸ This fact, anti-nuclear groups believe, confirms that, despite all technical advances in nuclear safety systems, nuclear risks remain high and the likelihood of nuclear accidents appears substantial.

Quantifiable technical risks in nuclear facilities, however, only constitute a part of the anti-nuclear discourse. In the view of anti-nuclear activists, a much more critical risk factor involves institutional components. Sociologists of technology have provided ample studies to demonstrate the pivotal role of social institutions in the success and failure of technology.⁸⁹ In fact, contemporary anti-nuclear movements in Indonesia have aroused the public to oppose nuclear development not so much by citing technical risks as by speaking about the deteriorating institutional capacities of the post-Suharto state and its tendency to become paralyzed. As they have observed the weak institutional capacities of virtually all levels of the government, it is no surprise that anti-nuclear activists have found BATAN's nuclear power proposal frightening and infuriating.

⁸³ "Menristek: PLTN Lebih Aman Dari Pada Merokok," *Detik.com*, April 30, 2005, at <http://jkt2.detiknews.com/index.php/detik.read/tahun/2005/bulan/04/tgl/30/time/193422/idnews/352878/idkanal/10>, retrieved July 22, 2007.

⁸⁴ Interview with Iwan Kurniawan, Jakarta, December 12, 2008.

⁸⁵ Interview with Arif Zayin, Semarang, August 28, 2007.

⁸⁶ Interview with M. Teguh Surya Jakarta, December 12, 2008.

⁸⁷ Ibid.

⁸⁸ Citizen Nuclear Information Center, at <http://cnic.jp/english/newsletter/nit125/nit125articles/siginc07.html>, retrieved May 20, 2009.

⁸⁹ See for example Wiebe Bijker, Trevor Pinch, and Thomas Hughes, eds., *The Social Construction of Technological Systems* (Cambridge, MA: MIT Press, 1986).

For BATAN, however, institutional capacity is precisely a strength they claim they can rely on when propagating the nuclear agenda. BATAN officials repeatedly underline their thirty years of experience in operating three research reactors, one of which, as accounted earlier, has a relatively large capacity of 30MG. They have asserted that, over the course of three decades, no major accidents that could lead to radioactive fallout have occurred in any of these reactors. This accomplishment, according to BATAN, can be attributed to their strict practice of imposing and following safety protocols in all their research facilities. Allegedly unblemished safety records therefore lead BATAN officials to believe that they have been successful in maintaining a culture that values safety and that could be adopted in future nuclear power plants.⁹⁰ Yet, Greenpeace Indonesia's coordinator, Nur Hidayati, fervently contested these self-congratulatory claims:

BATAN always proudly says that they have operated three reactors with no record of accidents. This is absolutely irrelevant because the reactors they talk about are for research, which technically are different from those for energy production. So it is awfully misleading to assume both are the same, and it cannot guarantee that they would be able to operate a nuclear power reactor. Besides, who knows whether there have been no accidents in BATAN? BATAN never releases information to the public on what they are doing. Nobody but BATAN staff are informed what is actually going on inside.⁹¹

Interestingly, BATAN framed this criticism as an expression of distrust not for BATAN's expertise, but for the capabilities of the Indonesian people in general. "It is very disappointing," BAPETEN deputy Asnatio Lasman bemoaned, "to see that many Indonesians do not trust their fellow countrymen in mastering technology."⁹² For Lasman and other BATAN officials, lack of trust among Indonesians weakens Indonesia's efforts to develop in technological fields. In an interview, he referred to an example, often used by BATAN officials, to illustrate that providing well-operated public facilities is not an impossible task in Indonesia:

Look at toilets in five-star hotels operated by Indonesian corporations. They are all convenient and clean, just like those at five-star hotels abroad. That's due to good management. This is proof that Indonesians are capable for providing high-quality services so long as we consistently practice good management.⁹³

Lasman's example implied that ensuring the safety of a nuclear power plant relies on routine procedures in facility management, and that Indonesia's laid-back culture, which many nuclear critics perceive as incompatible with a nuclear technology that relies on discipline to guarantee safety, poses no obstacle to achieving safety through such procedures. In other words, reducing nuclear hazards to the minimal level is likely to be accomplished through incorporating tight discipline and consistent control, a practice that can be carried out by any people, including Indonesians. However, some Indonesians have found this comparison between hotel managers and nuclear technicians to be laughable. Noted artist Sudjiwo Tejo once ridiculed BATAN: "They

⁹⁰ Interview with Adiwardojo, Jakarta, January 15, 2007.

⁹¹ Interview with Nur Hidayati, Jakarta, February 23, 2007.

⁹² Interview with Asnatio Lasman, Jakarta, February 27, 2007.

⁹³ Interview with Sukarman, Jakarta, March 27, 2007.

can't even keep their toilet from leaking, how will they be able to ensure the Muria plant won't leak?"

In fact, I have found that the condition of the toilets in the BATAN head office would not tend to reassure anyone who equates toilet maintenance with nuclear-reactor maintenance.⁹⁴ But the main point to be made here is the fallacy of the toilet analogy, not only because it is silly, but because it fails to acknowledge that efficient five-star-hotels are part of the private sector, while nuclear reactors would be supervised by Indonesian public agencies, including BATAN, which are perceived as less reliable. Indonesians have for some time felt disappointed with the government's management of public facilities. This is evident from a series of recent tragedies that cost many lives due to the failure of the government in maintaining consistent quality checks in public services operations. Deadly transportation accidents involving planes, boats, and trains are so common that it no longer surprises anyone when such tragedies occur. For most people, the root cause of these disasters is simply the government's negligence, which is interpreted as evidence that the government's institutional capacity is diminishing. The government's poor reputation undermines public approval of the nuclear power proposal, for it evokes apprehension and insecurity among many Indonesians. An Indonesian blogger lamented: "How can they operate a nuclear power plant? They are so lethargic in handling derailed trains, jammed traffic, collapsed highways, and so on!"⁹⁵ Further exacerbating this damaged reputation is the endemic corruption that plagues virtually all levels and sectors in the bureaucracy. Corruption in Indonesia is so chronic that most people are inclined to agree that even a tightly monitored project, such as the construction of a nuclear power plant, would be vulnerable to corruption. Noted intellectual Franz Magnis Suseno has stated that such a lucrative construction project "will open up ample opportunities for corrupt government officials to take advantage."⁹⁶ And corruption is not the only government failing that people fear. The failure of the Yudhoyono government to assist Sidoarjo residents effectively in the wake of a mud volcano eruption (popularly referred to as *Lumpur Lapindo*, after the company responsible for igniting the mudflow) in East Java in 2006⁹⁷ adds more ammunition for anti-nuclear activists who consider the Muria project to be a suicidal undertaking. Lumpur Lapindo made it clear that the government lacks plans for disaster response and mitigation. Iwan Kurniawan warned, "If the government is so sluggish in protecting Lapindo victims, how could you count on them to cope with a nuclear accident?"⁹⁸

The bottom line here is that opposition to nuclear development in post-Suharto Indonesia rests on the public's concern with the diminished institutional capacities that are paralyzing the state. Anti-nuclear groups view this as the main source of risks that cannot be overcome simply by good management procedures allegedly practiced at

⁹⁴ A few times I used toilets at the BATAN head office in Jakarta, and the toilet was not as clean as those found in five-star hotels, and the sink was leaking.

⁹⁵ <http://priyadi.net/archives/2007/01/03/tentang-musibah-adam-air/>, retrieved April 23, 2008.

⁹⁶ Franz Magnis Suseno, "Mengapa PLTN Muria Tidak Boleh Dibangun Sekarang?," in *Melawan Iblis Mephistopheles*, ed. Nick Wiratmoko (Salatiga: Marem-Pustaka Percik, 2008).

⁹⁷ For a complete account of this disaster, see Jim Schiller, A. Lucas, and P. Sulistiyanto, "Learning from the East Java Mudflow: Disaster Politics in Indonesia," *Indonesia* 85 (April 2008): 51–77.

⁹⁸ "PLTN Ramah Lingkungan Tetapi Berisiko," *Koran Tempo*, June 22, 2007.

BATAN's facilities. Neither does BATAN's safety record suffice to convince them that similar safety practices at the future Muria site will prevent a disaster, especially since anti-nuclear activists doubt that such a culture of safety has permeated the entire structure of the bureaucracy. After all, the assertion that BATAN maintains strong safety standards was undercut when one of BATAN's chemical laboratories exploded, reportedly due to an experiment that had gone awry.⁹⁹ Similarly, an investigation by Greenpeace activists revealed that even BAPETEN, an agency tasked to guard the public from nuclear mishaps, apparently failed to carry out its extremely important duty when inspecting the Kartini reactor in the aftermath of a severe earthquake that hit Yogyakarta in May 2006.¹⁰⁰

Essentially, the organized resistance against nuclear power contends that the post-Suharto Indonesian state is not able to deal with the magnitude of potential hazards involved in nuclear power development and maintenance. They also disapprove of nuclear power on the grounds that the utilization of this form of energy could drag Indonesia into a new dependency on imported nuclear fuels, which would in time "weaken Indonesia's energy security, which the government seeks to strengthen,"¹⁰¹ whereas "Indonesia possesses abundant renewable resources readily available to be exploited for energy generation."¹⁰² Their other arguments raise moral and civil-society concerns, for they contend that the presence of nuclear power could violate the democratic values now flourishing in post-authoritarian Indonesia. MANUSIA coordinator Dian Abraham suggested that the production of nuclear power—a technically sophisticated and hazardous process so often blanketed in secrecy—"tends to annihilate democracy and to limit transparency, as people are blocked from open information of the consequences of nuclear power, thus hindering them from genuinely participating in making decisions that incredibly affect them."¹⁰³ Finally, the ultimate reason to resist nuclear power is encapsulated in a statement from WALHI's energy campaign manager: "This is an act of state violence, and it is more horrifying because the people are forced to take a risk without their consent."¹⁰⁴ In sum, according to those who oppose nuclear development, this form of state violence indicates that the New Order's method of governing still lingers on.

⁹⁹ In September 2007, an explosion erupted at BATAN's research lab in Serpong, only a few meters from the nuclear facility. In the press conference, BATAN officials explained that the accident, which had killed one person, was the result of a mistake made by a chemical scientist conducting a lab experiment, and that no damage was done to the nuclear facility. However, BATAN did not allow the press to interview the researcher involved in the accident. BATAN insisted that the blast had not damaged the Siwabessy reactor, but it certainly damaged the image of BATAN's safety protocols.

¹⁰⁰ Concerned about the stability of the Kartini reactor, located in the middle of Yogyakarta, following the earthquake, Greenpeace activists sent a letter to the chair of BAPETEN asking how the organization responded to the event. A written public response from BAPETEN stated that BAPETEN only received a written report from BATAN's staff in Yogyakarta, and that BAPETEN representatives never paid a site visit to observe the real situation in the field. Interview with Nur Hidayati, Jakarta, February 27, 2007.

¹⁰¹ "Program Nuklir RI-Australia Dikecam," *Kompas*, November 11, 2006.

¹⁰² "Pernyataan Sikap Masyarakat Peduli Bahaya PLTN," Declaration of Society Concerned by Nuclear Risk, Jakarta, February 23, 2008.

¹⁰³ Interview with Dian Abraham, Jakarta, December 13, 2008.

¹⁰⁴ Interview with Pantoro Tri Kuswardono, Jakarta, August 22, 2007.

The Battle in Jepara

Situated along the northern coastline of Central Java, in a region that makes up the Muria Peninsula, Jepara is a *kabupaten* (district) about a two-hour drive from Semarang, its provincial capital (see Figure 2). Jepara covers a region of 940 square kilometers and has a population of over a million people, most of whom live off farming and fishing. For many years, Jepara has been best known for its traditional craftsmanship, and the furniture industry was the largest contributor to the local economy. However, an outbreak of illegal logging in 1998 caused the domestic teak supply to plummet, threatening the sustainability of the industry and spawning massive unemployment in Jepara.

The town of Jepara is associated with the history of women's emancipation in Indonesia, for it is the birthplace of Raden Ajeng Kartini, an Indonesian heroine who, long before the advent of modern feminism, became known for her support of Javanese women's rights to an education. It is perhaps not a coincidence that the nuclear reactor in Yogyakarta, built by BATAN engineers, was named after Kartini and that her modest hometown has been chosen as the host of Indonesia's first nuclear power plant. During the Suharto regime, as Jim Schiller has reported,¹⁰⁵ Jepara witnessed the proliferation of the New Order state, which succeeded in overpowering every element of civil society through bureaucratic politics, rendering Jepara a remarkable site for observing state-society relations. In post-Suharto Indonesia, the relations between the state and society have shifted, although certain traits of the New Order remain in place. Below, I examine the nature of state-society relations in this context to demonstrate how multiple social forces have shaken the edifice of state authority in this same locale.

Activities involved with nuclear research began to show up in Jepara after BATAN discovered that Jepara was (comparatively) geologically stable and therefore suited for nuclear power plants. In 1982, BATAN constructed a meteorological monitoring station to track and measure micro-earthquakes in the village of Ujung Watu, about sixty kilometers from the town of Jepara (see Figure 3). Occupying an area of 1.5 hectares, this station serves to record earthquake data originating from volcanic and tectonic quakes, as well as data measuring air pressure, wind speed and direction, humidity, and cosmic radiation levels. For a while, the station did not evoke much curiosity among local villagers, and BATAN could carry out research activities in the region without any trouble. When Suharto approved the inclusion of nuclear power into the national energy planning in 1990, Jepara emerged as the favored site for Indonesia's first nuclear power plants. BATAN followed up on the green light from Jakarta and began to approach local communities, introducing the general applications of nuclear technology and explaining their broad purpose.

¹⁰⁵ Jim Schiller, *Developing Jepara: State and Society in New Order Indonesia* (Clayton, Victoria: Monash Asia Institute, 1996).



Figure 2. "A" on the northern shore denotes the site for the proposed nuclear power plants.
(Map source: Google Earth, 2010)



Figure 3. BATAN monitoring station for micro-earthquakes
in Ujung Watu, Jepara (photo by Sulfikar Amir, with permission)

In 2004 when the Megawati administration gave a "thumbs up" to the nuclear revival, BATAN escalated its efforts to promote nuclear development through "socializing" the public. A group of sociologists from the University of Diponegoro (UNDIP), in Semarang, was hired to study the responses of local communities in the Muria Peninsula with respect to the issue of nuclear power. In the report, UNDIP researchers mentioned that not all Jepara residents opposed the construction of nuclear power plants in their neighborhood. However, they remarked, there was a considerable number of people who were against the proposal due to lack of

knowledge. They recommended four “strategic initiatives” to overcome this resistance, one of which included approaching local public figures and arranging for them to visit nuclear power plants overseas. The report explicitly recommended that BATAN should *not* involve “radical NGOs,” like WALHI, because of their anti-nuclear ideology.¹⁰⁶ Guided by this set of recommendations, BATAN’s intensive socialization programs kicked off in 2004 and became the primary task of BATAN staff assigned to the Ujung Watu research station. A mix of different approaches was employed in the socialization effort, from seminars, public discussions, and workshops, to art exhibitions and student speech contests. Knowing the important role of religion in the socio-cultural life of the Jepara people, the socialization programs penetrated into the activities of mosques and Catholic churches, since Muslims and Catholics constitute the two largest religious groups in the region. To moderate public hostility towards nuclear power, BATAN produced a sixty-minute film that conveys information on the production and operation of nuclear power plants, with emphasis on safety aspects. The film was reproduced on compact discs and distributed to Jepara residents on many occasions. Understanding that education is the best way to change people’s mind, BATAN held several workshops on nuclear science and technology in schools, involving science teachers from Jepara and the surrounding districts. BATAN officials hoped that the teachers would pass on the knowledge and information they had gained to their students. BATAN also sought to attract local students to the nuclear industry.¹⁰⁷ The agency granted scholarships to a number of Jepara students that allowed them to pursue a four-year study at STTN, in Yogyakarta. This group of select students is expected to make a first cohort of local technicians employed in the nuclear power plants of the future.¹⁰⁸

BATAN knew very well that its success in dealing with local communities, where poverty is a day-to-day reality, would largely depend on whether the nuclear project promised significant direct benefits to the people. As the majority of local villagers make their living through farming and the fishery, BATAN staff at the Ujung Watu station persuaded these people by distributing rice crops and fish seeds produced from nuclear research at BATAN labs in Pasar Minggu. To familiarize these people with nuclear-related processes, BATAN recruited a few leading farmers to become involved in small research projects at the Ujung Watu station. The head of the station, Suprpto, who had spent years studying nuclear engineering in France, explained that this approach was necessary as a way “to communicate the benefits of nuclear technology to the local community in the Muria Peninsula.” Suprpto expected that these villagers would “realize that the presence of a nuclear power plant would have positive impacts to their livelihood.”¹⁰⁹ The local government in Jepara facilitated the whole socialization program despite the controversy surrounding it. One local official justified this support: “Because we are part of the Unitary State of the Republic of Indonesia (NKRI), it is our duty to implement at best every decision made by the

¹⁰⁶ A. M. Djulianti Suroyo dan Mudjahirin Thohir, “Respon Masyarakat Terhadap Proyek PLTN di Jepara Jawa Tengah,” talk presented at the meeting of Komisi Ahli Tenaga Nuklir (KATN) Bandung, December 11–12, 2003.

¹⁰⁷ Interview with Eko Madi, Jepara, August 30, 2007.

¹⁰⁸ Interview with Kris Tri Basuki, Yogyakarta, December 17, 2008.

¹⁰⁹ Interview with Suprpto, Ujung Watu, Jepara, December 15, 2008.

central government.”¹¹⁰ It is no surprise that the district head of Jepara demonstrated complete support of BATAN’s activities. Occasionally he reminded his constituents of the economic benefits that would result from the construction of nuclear-power facilities in Jepara.

As soon as anti-nuclear activists began to consolidate their campaign in late 2006, they learned that BATAN had been conducting educational programs with Jepara residents for some time. A small group of activists from Jakarta was then dispatched to Jepara to investigate the situation. From their perspective, BATAN’s socialization programs were clearly propaganda and, as WALHI’s Central Java representative, Arif Zayin, characterized them, the presentations were “deliberately designed to divert people’s minds from nuclear risks.”¹¹¹ Concerned that the whole Jepara population might be converted to support nuclear development if BATAN were allowed to continue unchallenged, these activists took immediate action. First they established an extended network of anti-nuclear groups all the way to Jepara that would organize interactive communications and mobilize resources. WALHI’s Central Java representative in Semarang served as the regional coordinator for anti-nuclear campaigns in the province and maintained a link to an ad hoc organization in the village of Balong, named The United People of Balong (Persatuan Masyarakat Balong, PMB), and led by a member of WALHI. In the eyes of these anti-nuclear activists, BATAN represented the state’s hegemonic interests, which must be challenged proactively. Learning that nuclear socialization programs were incredibly skewed towards the interests of nuclear industry, while concealing facts about risks that the local communities had the right to know, anti-nuclear activists from Jakarta worked together with their counterparts in Jepara and the surrounding areas to spread information about the risks of nuclear power. This alliance employed a number of methods to counter the positive, unthreatening image of nuclear development that BATAN had already planted in the minds of local residents. One campaign method the alliance used to raise awareness of nuclear risks was public discussion: local residents were invited to express their opinions on nuclear power, and were then told an alternative story outlining the potential threats posed by development. Usually these discussions featured a documentary about the devastating Chernobyl nuclear disaster and the nearly unimaginable long-term impacts of a nuclear meltdown. This method proved to be so powerful that it forged new resistance against nuclear power among the local community almost immediately. That opposition was reinforced when Abdurrahman Wahid, feeling guilty for having approved the nuclear power proposal, decided to back anti-nuclear groups by forming Garda Muria, an ad hoc organization, led by Wahid’s daughter Yenny Wahid, that mobilized young members of Nahdlatul Ulama. Founded in early September 2007, Garda Muria countered BATAN’s claims on the grounds that its nuclear development project could destroy the graves of *nahdliyin* ancestors who had first spread Islam in the region.¹¹²

In their efforts to win the support of Jepara residents, BATAN representatives came to realize that dealing with anti-nuclear campaigns run by activists from Jakarta is one

¹¹⁰ Interview with Mulyaji, Jepara, August 30, 2007.

¹¹¹ Interview with Arief Zayin, Semarang, August 28, 2007.

¹¹² <http://nuhamaarif.blogspot.com/2007/09/koordinator-garda-muria-zakariyya-el.html>, retrieved June 1, 2009.

thing, but facing resistance built up by local activists is quite another, and more difficult. BATAN faced a daunting challenge from the local environmental group MAREM, which entered the nuclear politics contest in late 2006. The organization was originally founded as a response to environmental damage in the Muria Peninsula caused by rampant illegal logging and uncontrolled iron sands mining along the coastline. Worried that these depredations might undermine the sustainability of major economic sectors, MAREM members felt obliged to resist further incursions. When they heard BATAN's proposal had been resurrected, MAREM instantly switched its chief agenda to focus on challenging nuclear power development in Jepara. Led by Lilo Sunaryo, an owner of a small hotel in Jepara who had completed a doctoral degree in power engineering in Uzbekistan, MAREM rapidly arose as the leading local anti-nuclear group. Lilo Sunaryo explained the reason for MAREM's new focus:

MAREM was basically formed to respond to BATAN's false claim that Jepara residents had no objection to the construction of nuclear power plants and that the opposition comes only from people outside. The fact is, they are wrong. People here in Muria fear nuclear dangers, mostly because we all know the government is careless. Almost every day, we see newspaper headlines about transportation accidents caused by human errors. That kind of accident could happen if nuclear power plants were built here.¹¹³

Sunaryo's fear was widely shared by his fellow residents. As the mass media constantly reported on transportation accidents and corruption scandals, all of which demonstrated the acute incompetence of the state in performing its regular duties, many Jepara residents grew convinced that nuclear power development could cause harm. A number of these concerned individuals joined the anti-nuclear cause. MAREM's membership includes public figures, such as religious leaders from the local Muslim and Catholic communities, intellectuals, artists, and politicians from Jepara, Kudus, and Pati, the three districts that make up the Muria Peninsula. Among the advisory board members were former BATAN nuclear scientist Iwan Kurniawan, physicist Liek Wilardjo, environmental scientist Budi Widianarko, and law professor Benny Setianto. With information and materials flowing from Jakarta, supplied by the anti-nuclear network, MAREM educated local residents in the social and environmental hazards of nuclear power. Within months, thanks to MAREM's efforts, the risks posed by nuclear plant construction had become public issues, widely discussed. MAREM helped spread the word by staging large events, such as those held in Jepara, Kudus, and Pati on three consecutive Tuesdays in June 2007. These street protests involved more than five thousand people in each town and featured special performances by such allies as folk singer Franky Sahilatua, religious poet Emha Ainun Nadjib, and many local artists. Joining the force, interestingly, were some district parliament members, the Kudus district head, and a contingent of military officers who came to show their support.¹¹⁴ Such massive anti-nuclear protests involving diverse participants, including public officials, had never occurred in the New Order era, and they helped MAREM attract media attention, both locally and nationally, enhancing the organization's reputation as a force to be reckoned with by

¹¹³ Interview with Lilo Sunaryo, Jepara, August 30, 2007.

¹¹⁴ "Demo Anti PLTN Merambat ke Kudus," at http://www.walhi.or.id/kampanye/energi/pltn/070612_pltnkds_cu/, retrieved October 23, 2007.

nuclear proponents in Jakarta. Later, supported by WALHI and Greenpeace crews, MAREM and other local anti-nuclear elements, such as student bodies, peasant associations, labor unions, and artists' groups, successfully pushed Central Java's parliament to declare Central Java, officially, as a nuclear free province—a politically significant move to slow down Jakarta's nuclear agenda.¹¹⁵

Apart from drawing strength from intellectual groups, MAREM was able to organize anti-nuclear campaigns with considerable financial support from local businesspersons who own large industries in the region, most notably Djarum Corporation, a major Kudus-based cigarette company. Djarum is one of Indonesia's most substantial taxpayers; its owner is listed as one of Indonesia's forty wealthiest residents. The involvement of Djarum and other locally based, large-capital businesses in anti-nuclear campaigns remains indirect thus far. Their contributions to MAREM's activities, which one can speculate probably reached billions of rupiahs, were largely personal, rather than organizational, donations.¹¹⁶ These business groups supporting the anti-nuclear movement are motivated by an apprehension that "the presence of a nuclear power plant in the Muria Peninsula would damage the image of their products, thus ruining their business sustainability."¹¹⁷ In April 2007, the Kudus branch of the Indonesian Business Association (Asosiasi Pengusaha Indonesia, APINDO) declared its opposition, threatening to relocate its business activities away from Kudus if the Muria plants were constructed. This scenario caused the local governments and residents even more anxiety, as it would cost the region jobs. Accordingly, local workers' unions took the same stance. A union representative asserted: "Business associations and worker unions are hand-in-hand in opposing the proposed construction of nuclear power plants in the Muria Peninsula. We are not joking or bluffing. We mean business."¹¹⁸

In early 2007, the Commission VII of the DPR approved a request from RISTEK to spend Rp. 5 billion for nuclear education in Jepara. This was part of a budget packet of Rp. 25 billion approved by the commission one year earlier. Soon after the approval, money started pouring in to speed up the nuclear socialization programs already underway. Some of this financial package, organized by RISTEK's Deputy of Social Dynamics, went to finance overseas visits by local public figures to nuclear power plants in Japan and South Korea, as UNDIP had recommended. Leaders from institutions deemed to represent the local community participated in this series of visits, including two NU *ulamas* from Jepara, Muhsin Ali and Nafiudin Hamdan. A few members of the Commission VII tagged along. More persons were actually invited, as well, but they declined the invitation. Among them was the chair of PCNU Jepara, Nuruddin Amin, who later embarked to Japan and South Korea after being invited by anti-nuclear groups in those countries. In South Korea, he dared to join briefly a protest in front of a nuclear power plant. Dismayed by PCNU participation in the RISTEK

¹¹⁵ "Empat Fraksi Tolak PLTN," *Suara Merdeka*, August 22, 2007.

¹¹⁶ "Membandingkan Bajaj dan Tronton," *Tempo*, September 10–16, 2007.

¹¹⁷ Interview with Hasan Aoni Aziz, Kudus, August 31, 2007.

¹¹⁸ "Dampak PLTN: Ratusan Ribuan Terancam PHK," *Kompas*, April 24, 2007.

comparative study visit, Amin declared that “the two NU *ulamas* joined the visits based on their own personal will, and they did not necessarily represent PCNU.”¹¹⁹

The funding for the socialization programs became a flashpoint in these debates when Alvin Lie and Sonny Keraf paid a visit to Balong in July 2007. Hailed by two thousand Balong residents, Lie and Keraf informed their audience that the Commission VII had approved a budget of Rp. 5 billion to pay for the promotional materials and lectures addressed to the local community, in particular those living in Balong. This information instantly enraged Balong residents, for they had seen no evidence of these outreach projects in their neighborhoods. “That is a lie. There is no socialization here,” responded Balong residents to Lie and Keraf.¹²⁰ Though Lie and Keraf promised that they would relay Balong’s protests to the parliament, Balong residents were furious, and especially disappointed with the village administration for failing to channel their concerns. This was not the first time they felt they had been treated like fools by BATAN and the village administration. Three years earlier, BATAN had built a research facility in Ujung Lemah Abang, near the village, and explained that the facility’s function was specifically to monitor wind speed for meteorological research. But the majority of Balong residents concluded that the facility was the embryo for a nuclear power plant. The fact that they were never included in decision-making led to the people’s conviction that BATAN and the village head were involved in a conspiracy. One Balong resident lamented, “We were never consulted. Those high officials [from BATAN] only talk to the village head. The next thing we know, they have this tower and building installed in our village.”¹²¹ In February 2008, thousands of Balong residents marched to BATAN’s research station at Ujung Lemah Abang and forced the staff to shut down the tower and the building. To ensure the facility would never function, they sealed the front gate with a four-meter-long cement barrier. “This is to assert that the villagers will not let the construction of nuclear power plants take place here,” the protestors’ spokesperson explained.

These angry protests were not entirely spontaneous. The anger of the people was constantly stoked by a small group of leftist student activists from Yogyakarta, working under the banner of the Student Solidarity for Democracy Forum (Forum Solidaritas Mahasiswa Untuk Demokrasi, FORSMAD). Trained by radical environmentalist George Junus Aditjondro, a cofounder of WALHI and long-time anti-nuclear activist, these students spent months living with Balong’s villagers, serving as what they called “community advocates.” To establish a strong tie with local villagers, they formed the Anti-nuclear Coalition of Students and People (Koalisi Rakyat dan Mahasiswa Tolak PLTN, KRATON), which allegedly represented the village of Balong. This group was separate from WALHI and MAREM, and the members’ focus was slightly different from that of other anti-nuclear groups. They viewed nuclear power as a dehumanizing force and perceived insidious agendas lurking behind the Muria project. As the coordinator of FORSMAD put it, “Our goal is to contain the spread of neoliberalism. The construction of nuclear power plants in Jepara represents the penetration of neoliberal forces and is mostly driven by capital interests.”¹²² One

¹¹⁹ “BK DPR Usut Kunjungan Nuklir,” *Suara Merdeka*, July 26, 2007.

¹²⁰ “Pak Kades Bungkam Soal Reaktor Nuklir di Jepara,” *Sinar Harapan*, July 24, 2007.

¹²¹ Ibid.

¹²² Interview with Darul Hasyim, Balong, Jepara, August 31, 2007.

KRATON member even fantasized about initiating a local revolution once their actions against neoliberal interests had been accomplished.



Figure 4. The gate to the Balong village, marked by anti-nuclear slogans (photo by Sulfikar Amir, with permission)

It is important to note that Jepara's residents were not unanimous in their opposition to the construction of nuclear power plants in their area. Many subscribed to the faith that this development would bring benefits to the region. BATAN was aware of these pro-nuclear individuals and sought to mobilize them to confront resistance from locals groups, especially in Balong. Thus BATAN, on the sly, sponsored the creation of a non-governmental organization, Peduli Jepara (Care About Jepara), or PIPA, which was headquartered in Kembang village. Members of PIPA (who were allegedly funded by BATAN) proclaimed a neutral stance: "We want to stand up in the middle between pro- and anti-nuclear groups. Our motto is to unite and to empower. We need to prevent our people from being divided by the nuclear controversy, which they know so little about."¹²³ PIPA was comparatively short-lived, for it lacked genuine supporters, while anti-nuclear groups, by contrast, grew even

¹²³ Interview with PIPA coordinator, Jepara, September 2, 2007.

stronger as anxieties among Jepara residents remained high despite BATAN's diplomatic initiatives. Seeing a campaign opportunity, the Jepara branch of PDI-P raised a banner at the entrance of Balong village showing the party's logo and the phrase, "*Bersama Rakyat Kita Tolak PLTN*" (With the People We Disapprove of Nuclear Power Plants).

As the various anti-nuclear elements united behind a shared agenda to block nuclear development in Jepara, they constituted a formidable force, challenging the state authorities represented by BATAN, BAPETEN, and other nuclear-supporting agencies. To deal with this complex situation, RISTEK worked out a plan to lobby Nahdlatul Ulama in Jakarta. Minister Kadiman met with the chair of Nahdlatul Ulama, Hasyim Muzadi, in Jakarta. The meeting was fruitful, as Muzadi agreed to favor RISTEK in arranging socialization programs targeting all NU *ulamas* in Central Java. This agreement led RISTEK to involve PCNU in Jepara, and the local NU branch hailed Jakarta's plan to organize a public meeting, during which RISTEK would make its case for nuclear development. As both RISTEK and PCNU officials shared the same concerns regarding public unrest over the nuclear issues, they came to a conclusion that an open dialogue between nuclear advocates and opponents was desperately needed. Following the dialogue, there would be a *bahtsul masa'il*, a forum for NU *ulamas* to discuss the possible benefits and potential disadvantages of the Muria nuclear plant. Through its link to Nurudin Amin, MAREM played an influential role in setting up the meeting by placing high-profile, anti-nuclear spokespersons on the panel. PCNU invited both BATAN experts and MAREM-affiliated anti-nuclear experts, hoping that this diverse group would elaborate all aspects of nuclear power to the curious *ulamas*. Three government scientists were given an opportunity to present their arguments for the economic and technological advantages of nuclear power and its strategic role in maintaining the country's energy security. Another three speakers from the opposing side presented their critical analysis of the social, legal, and technical factors indicating that the construction of nuclear plants threatened to cause irreversible damage to the people and environment of Muria.

As described in the opening section of this paper, the outcome of the forum shocked RISTEK and BATAN officials. However, it did not much surprise local activists. One MAREM member expressed his opinion of the protests: "PCNU's decision [to oppose nuclear development] involved religious considerations as much as political ones. They had no other options available to keep the allegiance of their adherents."¹²⁴ In other words, the *haram fatwa* could be interpreted as a political move on the part of PCNU *ulamas* who hoped to escape public pressure by issuing a "Not-In-My-Backyard" *fatwa* opposed to nuclear development.¹²⁵ Yet, the decision failed to satisfy Balong residents, because they were aware that the *fatwa* was not a binding law that could block, once and for all, the possibility that nuclear power plants would be constructed in their village. The residents' loss of trust in their *ulama* was a prime factor in their dissatisfaction. The coordinator of PMB, Sumedi Setiawan, lamented, "*Ulamas* are no different from politicians. They have their own interests."¹²⁶ The sort of

¹²⁴ Interview with Hasan Aoni Aziz, Kudus, August 31, 2007.

¹²⁵ The PCNU *ulamas* stated that the fatwa only applies to the Muria context. It is thus inapplicable should the government plan to build the nuclear power plant elsewhere.

¹²⁶ Interview with Sumedi Setiawan, Balong, Jepara, December 22, 2008.

disillusion Setiawan expressed is perhaps reflected in political Islam's recent decline in popularity, a decline that threatens the *ulamas*, who have for a long time cultivated power in the political arena.



Figure 5. The PCNU meeting on the nuclear issues, held on August 31, 2007
(photo by Sulfikar Amir, with permission)

PCNU's unprecedented denunciation of nuclear power in Jepara involved some serious implications. A few days after the *bahtsul masa'il*, feeling confused by the outcome of the meeting, Muzadi summoned PCNU officials to revoke the *fatwa* on the grounds that the *ulamas* should not have become engaged with such a highly technocratic issue in the first place. Muzadi decided that the issue of nuclear power lay outside their jurisdiction. But he did not put all the blame on PCNU Jepara. He believed, on one hand, that the NU *ulamas'* anti-nuclear stance was caused by "*masuk angin*," referring to provocation by certain actors whose interests were threatened by future nuclear development. On the other hand, he regretted BATAN's sloppy response and its failure to anticipate hostility from the local community, and suggested that the agency find another suitable location for development outside Jepara.¹²⁷ Following Muzadi's involvement, the *fatwa* was eventually lifted, but it had already increased the leverage of the anti-nuclear alliance to such an extent that it had alienated officials in Jakarta. The head of BAPETEN, discontented with the way events had unfolded, condemned anti-nuclear activists, calling their campaigns *pembodohan*, referring to a conspiracy by unpatriotic, self-interested groups to fool lay people. They attributed the organized resistance to local business groups, specifically the Djarum Corporation, which they suspected was financing anti-nuclear campaigns to protect its

¹²⁷ Conversation with Hasyim Muzadi, Doha, Qatar, May 29, 2009.

own interests.¹²⁸ Tjatur Sapto Edy of the Commission VII echoed these complaints, saying, “they have slowed down the country’s effort to achieve progress in technological superiority and energy security.”¹²⁹ Minister Kadiman, however, held a different view. He believed that the problem was rooted less in resistance than in the poverty overwhelming local communities in Jepara. Accordingly, he suggested President Yudhoyono pour some billions of rupiahs into improving infrastructure and public schools in the areas surrounding Jepara. “With economic conditions improved, I am pretty sure it will sweeten the relationship between the government and local residents and reduce public resistance in Jepara,” Kadiman said.¹³⁰ Whatever explanation one seeks for the events in Jepara, one thing remains clear. The road to nuclear development is now longer and bumpier than it first appeared to pro-nuclear technocrats.

Epilogue

To explain the political drama that unfolded in the nuclear politics case discussed throughout this paper, I have drawn from an approach in technological politics and used it to examine specifically the relationship between the state and technology. As pointed out earlier, studying the politics of technology provides a deeper understanding of how the state seeks to subjugate society through technological means, and it also sheds light on the state’s power structure, which is underpinned by technocratic force. A discussion of the nature of the post-Suharto state serves as a backdrop for the analysis of how nuclear power as a technological regime has gained the ascendancy in post-authoritarian politics.

As is generally known, for thirty-two years, Suharto maintained the stability of his New Order state, sustaining his power by exploiting the military, the bureaucracy, and pseudo-democratic *trias politica* institutions. The New Order state was structured around patrimonial relations, serving the predatory interests of Suharto’s deeply entrenched oligarchy. Over the course of the last decade, this structure underwent turbulent changes, triggered by the 1998 democratic reforms. A set of structural transformations introduced into the state has radically altered not only the ways in which the state performs its constitutional duties, but also its capacity to discipline the entire society. In an edited volume on the state in post-Suharto Indonesia, Gerry van Klinken and Joshua Barker highlight several noticeable features of the Indonesian state after the demise of the New Order. Observing a wide range of state authority being enacted at the micro-political level, van Klinken and Barker suggest that, while the state in post-Suharto Indonesia remains the primary source of power for interested parties, it barely retains autonomy, for it has become “a site of struggle among many competing groups.”¹³¹ As a result, the state’s authority “is not as centered, unified, and

¹²⁸ Conversation with Adiwardoyo, Singapore, November 2, 2007.

¹²⁹ Interview with Tjatur Sapto Edy, Jakarta, September 12, 2007.

¹³⁰ Interview with Kusmayanto Kadiman, Jakarta, August 14, 2007.

¹³¹ Gerry van Klinken and Joshua Barker, “Introduction: State in Society in Indonesia,” in *State of Authority: The State in Society in Indonesia*, ed. Gerry van Klinken and Joshua Barker (Ithaca, NY: Cornell Southeast Asia Program Publications, 2009), p. 2.

hegemonic as it has often been taken to be"¹³² due to "the social embeddedness of the state ... in neopatrimonial mode of relations."¹³³

Such an observation about the periphery helps uncover to what extent the Indonesian state has been penetrated by non-state actors, from profit-making groups and rent seekers to street strongmen. While I am inclined to agree that the state of authority in post-Suharto Indonesia has dispersed, a condition caused by incessant democratization and decentralization processes, the case of nuclear politics delineated in this paper shows that the central state still holds a certain degree of autonomy, and technocracy remains at the core of the state's operation. In a similar vein, while the Indonesian polity in the post-Suharto period is undergoing democratic transitions, the central state strongly shows proclivities to maintain its old attitudes and culture. As the state institution is forced to adapt to a democratic environment, where it is situated on a par with civil society, its behavior is informed by a hegemonic logic that is intent on subjugating elements of civil society under its authority.

That is not to say, however, that the central state in the post-Suharto era is completely under the control of technocrats and that the state authority at its core has not been destabilized. During the Asian financial crises, neoliberal forces penetrated deeply into the state structure and brought about massive changes to state authority, as a result of which state interventions in public affairs were substantially lessened. The underlying logic in hyper-liberalization measures rests on the assumption that market mechanisms would lead to the efficient production of public goods. The results of this neoliberalizing process have been ambivalent. As Richard Robison and Vedi Hadiz have scrutinized, the imposition of IMF's structural adjustment agendas failed to establish a political-economic arrangement able to sweep out predatory interests still attached to the state. Robison and Hadiz maintain that the post-Suharto state is besieged by politico-business oligarchies that have managed to return to power after most of Suharto's cronies were displaced by sudden political reforms.¹³⁴

As the central state was beset with the diminishment of its own authority and an inability to meet the public's needs, nuclear politics emerged to channel the desire of state technocrats, i.e., technoscientific experts at BATAN, BAPETEN, and RISTEK, to assert their authority in the energy sector. Notable from the nuclear politics in post-Suharto Indonesia is the ability of these nuclear technocrats to mobilize support from a wide range of potential patrons without being significantly undermined by a neoliberalized environment. Instead, as shown throughout this paper, nuclear technocrats exploited neoliberal trends—namely the loss of oil subsidies, global expansion of nuclear industries, and a more open investment climate—to reinforce Indonesia's nuclearization process, which, interestingly, was wrapped in a nationalist rhetoric.

Situated in this context, technological politics is highly relevant to a study of post-Suharto Indonesia, as it reveals an underlying feature of the state that is distinct compared with its earlier structure. By examining the intercourse between

¹³² Ibid.

¹³³ Ibid., p. 9.

¹³⁴ Richard Robison and Vedi Hadiz, *Reorganizing Power in Indonesia: The Politics of Oligarchy in an Age of Markets* (London: RoutledgeCurzon, 2004).

technological politics and the state, this paper unravels the new structure of relations that strongly influences how the post-Suharto state operates in democratized politics. To use Langdon Winner's concept of technological politics,¹³⁵ nuclear technocrats are part of the technical elite, who draw authority from possession of technical knowledge extensively used to construct, facilitate, and justify their imaginings of how society should be organized. The state institution serves as a venue that technical elites use to impose a set of predetermined goals on society, along with the risks involved in achieving these goals. Because technology is inherently political, these technical elites must be recognized as political actors who play a prominent role in governing society through technological means. During Suharto's rule, technical elites faced no substantial barriers to achieve their goals, thanks to the concentration of power in Suharto who strongly favored these technocrats. After Suharto's departure, the centrality of the president's power in national policymaking vanished, a sudden change followed by the decline of the New Order's single-party system. Resulting from this process was a fragmented state in which various groups rooted in different ideological streams, interests, and oligarchies struggled to gain some share of the state's power. During the Yudhoyono administration, this fragmentation has become even more apparent due to President Yudhoyono's weak leadership and inability to control his multi-party cabinet. This fragmented condition compels nuclear technocrats to gather political and economic support from an array of relevant actors, including those outside the state, resulting in the formation of a peculiar network of actors.¹³⁶

As a political group, nuclear technocrats have their own interests to secure and, in the nuclear politics context, those interests cover both material (i.e., electricity generation, financial surpluses, etc.) and symbolic (i.e., national prestige, technological capacity, etc.) elements involved in the construction and operation of nuclear power plants. The pursuit of those interests was first facilitated by mobilization of a nuclear discourse that nuclear technocrats produced and spread throughout all networks connected to the state. As noted earlier, the nuclear discourse is composed of three crucial issues, namely: the peak and threatened decline of national oil revenues; environmental degradation; and deteriorating nationalism. This nuclear discourse enabled nuclear technocrats to attract diverse allies, including DPR politicians, the Islamic-oriented PKS, a South Korean nuclear company, IAEA, and other nuclear-related international agencies, national conglomerates, and local groups in Jepara. These actors constitute the network that shores up nuclear politics in post-Suharto Indonesia. It is through this network of pro-nuclear actors and technical resources that nuclear technocrats at BATAN exert power. The network primarily revolves around the interests of the nuclear technocrats, and it moves along the state agenda conceived by the technocrats. Furthermore, through this network, nuclear technocrats were able to translate their interests into state regulations, such as presidential decrees, the Nuclear Energy Act, and the Long-term National Development Planning initiative, and

¹³⁵ Langdon Winner, *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought* (Cambridge, MA: MIT Press, 1978).

¹³⁶ This observation is drawn from a sociological framework known as the "actor-network theory." See Bruno Latour, *Science in Action: How to Follow Scientists and Engineers in Society* (Cambridge, MA: Harvard University Press, 1988); Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay," in *Power, Action, and Belief: A New Sociology of Knowledge*, ed. John Law (London: Routledge & Kegan Paul, 1986); John Law and John Hassard, eds., *Actor-Network Theory and After* (Oxford: Blackwell Publishing, 1999).

so forth, a move that, in turn, has strengthened the alliance of pro-nuclear actors. Throughout this development, the nuclear reactor, as it is envisioned and desired, serves as the reference for every action taken by the pro-nuclear alliance. The closer they are to the realization of their plans to build the reactor, the stronger this alliance becomes.

Yet the pro-nuclear alliance constitutes only half of the story of state–society relations in nuclear politics. As noted earlier, nuclear politics is marked by a schism between the state and civil society groups due to disagreements regarding the perceived level of risk associated with building and operating nuclear power plants. This paper observes the growing power of civil society groups as a result of democratization. With increased self-organizing capacities, these groups dared to challenge the central state’s technological politics by making the nuclear program a contentious social, political, and even religious issue, and seeking to influence political decisions. In this struggle, we can clearly see how the anti-nuclear alliance, comprising multiple groups with different interests and agendas, managed to unite behind shared concerns, made use of local and global networks and resources, and effectively resisted the state’s policies (e.g., by raising public awareness). The battle in Jepara is a showcase of how the anti-nuclear alliance extensively mobilized popular support to force the retreat of nuclear advocates, at least for the time being. In the end, the implications of nuclear politics to state–society relations are profound as the controversy virtually splits the state and civil society groups into a fierce conflict fueled by distrust, suspicion, and hostility.

To conclude, one may ask: Will Indonesia remain nuclear-power free? The dynamics of contemporary politics in Indonesia make it difficult to offer an accurate forecast. However, one may suggest a possible outcome. It is likely that the planned construction of nuclear power plants in Jepara will be cancelled permanently due to strong local resistance that BATAN and other pro-nuclear bureaucrats seem unable to overcome. This does not mean that the prospects for nuclear-power production in Indonesia will diminish entirely, however. Given the widespread enthusiasm for nuclear-power development among state elites, developing nuclear power will likely proceed by following another scenario, i.e., planners will find another suitable location, an option that Hasyim Muzadi and Abdurrahman Wahid have recommended. As a matter of fact, the governor of Banten province has recently shown a keen interest in facilitating the construction of nuclear power plants in Banten,¹³⁷ and it is likely that other provinces, including those outside Java,¹³⁸ will follow suit, given the persuasive arguments and economic incentives advanced by pro-nuclear bureaucrats in Jakarta. Although finding a suitable and welcoming site will not be as simple as it may appear, this is still a feasible scenario. If this happens, then the next question will be whether the anti-nuclear alliance can shift its fight from one locale to another. The answer to that will depend on the capacity and flexibility of anti-nuclear groups working at the national level to mobilize local anti-nuclear supporters at the new site.

¹³⁷ “PLTN Akan Dibangun di Pantura Banten,” *Kompas*, August 5, 2008.

¹³⁸ “DEN Kaji Usulan Bangun PLTN di Kalimantan,” *Sinar Harapan*, December 10, 2009.